
IN THE
United States
Circuit Court of Appeals,
FOR THE NINTH CIRCUIT.

Warren Brothers Company,
Appellant,

vs.

C. M. Thompson, O. M. Thompson, E.
O. Thompson, Copartners Doing
Business Under the Firm Name and
Style of Thompson Brothers; H. E.
Vogel and J. B. Hill,
Appellees.

BRIEF FOR APPELLEES.

GEORGE R. LOVEJOY,
District Attorney of the County of Fresno.

RAY C. WAKEFIELD,
Special Counsel for the County of Fresno.

FREDERICK S. LYON and
LEONARD S. LYON,
*Special Patent Counsel, Solicitors for Defendants-
Appellees.*

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No. 4036.

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BRIEF FOR APPELLEES.

STATEMENT OF THE CASE.

On the 27th day of September, 1920, the Board of Supervisors of the county of Fresno, state of California, adopted certain specifications, presented by the county surveyor, to govern the paving of a certain part of Route 5, Section A, Fresno county highway system. [R. 7, 8.] These specifications include alternative types of asphalt wearing surfaces referred

to as Type A and Type B, respectively. [R. 34-49.] On November 5, 1920, a contract was awarded by the Board of Supervisors to appellees C. M. Thompson, O. M. Thompson, and E. O. Thompson, copartners, doing business under the firm name of Thompson Brothers, for the paving of the said part of the Fresno county highway system. [R. 10.] Appellees H. O. Vogel and J. B. Hill are sureties on the bonds of the said contractors for the faithful performance of the contract and for the security of materialmen, laborers, and others, respectively. [R. 11.] The contract provides for the laying of Type A asphalt wearing surface upon an asphalt concrete base. [R. 49-54.]

Pursuant to the above contract and specifications, and during January, 1921, the appellees Thompson Brothers laid the pavement (comprising an asphalt concrete base and Type A Asphalt Wearing Surface) on Blackstone avenue in the county of Fresno, adjoining the city boundary of the city of Fresno and extending for a distance of approximately 600 feet. It is stipulated that this pavement was laid under and in accordance with the aforesaid specifications. [R. 198.] On the 15th day of February, 1921, the bill of complaint in this suit was filed in the District Court against Thompson Brothers and their sureties, alleging that the Blackstone avenue pavement as laid in accordance with the type A specifications constitute an infringement of United States Letters Patent No. 959,976, granted to Edwin C. Wallace. [R. 59.] On April 11, 1921, the county of Fresno filed a petition

herein for leave to intervene [R. 75-80], and an order granting the petition was entered by the District Court on April 19, 1921. [R. 83.] As alleged in its petition for leave to intervene, the county of Fresno is directing the defense of this case and paying the expenses thereof. [R. 79.]

Upon petition of defendants under Equity Rule 48 [R. 82], the District Court entered an order on April 19, 1921, that the testimony in chief of the expert witnesses in this case be filed in affidavit form. [R. 83, 84.] Pursuant to this order, plaintiff filed the affidavits of Edwin C. Wallace [R. 88], George H. Perkins [R. 113], and James W. Howard. [R. 134.] Edwin C. Wallace is the patentee of the letters patent in suit. George H. Perkins is a representative of appellant. James W. Howard is a consulting engineer. Defendants filed the affidavits of Chris P. Jensen [R. 150], Harry E. Leyden [R. 143], and Elmer O. Slater. [R. 141.] Chris P. Jensen is the county surveyor of the county of Fresno, and the man who prepared the specifications for the type A wearing surface and under whose direction the same was laid. Harry E. Leyden is the chief inspector for the Fresno county highway system. Elmer O. Slater is the manager of the Los Angeles laboratory of Smith-Emery Company, chemical engineers and chemists. The plaintiffs also filed the depositions of Arthur A. Adams [R. 230], Charles S. Ashley [R. 199], and Jacob A. Courtade [R. 219], to show commercial use of the alleged Wallace invention in New England.

The case was tried in open court before Judge Benjamin F. Bledsoe on the 8th and 9th days of November, 1921. The expert witnesses whose affidavits had been filed were presented for cross-examination, and, over the objection of defendants, plaintiff was permitted to introduce additional expert evidence. [R. 309; 318-323.] Specimens of pavement, and documentary exhibits, were offered by the respective parties. A number of witnesses testified in open court before Judge Bledsoe, and the case was submitted on briefs. [Pursuant to stipulation, the original briefs have been certified to this court with the record on appeal.] [R. 517.]

In its opening brief (p. 26), appellant requested the District Court to personally view the Blackstone avenue pavement *in situ*, and in their brief (p. 66) appellees joined in this request. In the interval between the submission and decision of the case, Judge Bledsoe held the Fresno term of the District Court, and in his Memorandum Opinion basis his findings in part upon "an inspection of the pavement laid." [R. 502.]

The decision of Judge Bledsoe was announced in a memorandum opinion filed May 29, 1922. [R. 501-504.] The text of this opinion will be discussed at another point in this brief. The court found that the Blackstone avenue pavement as laid in accordance with type A specifications does not infringe upon the patent in suit. A decree of dismissal was entered in accordance with the opinion. [R. 84a.] The plaintiff thereupon moved to vacate the decree and substitute therefor a decree adjudging the patent in suit

to be valid though not infringed. This motion was denied by the court in a Memorandum Opinion filed July 5, 1922, 282 *Fed.* 326. [R. 504.]

The patent 'in suit is for a "composite pavement" employing a suitable base and a wearing surface or coating for the base. The particular construction of the base is not involved in this case, the base of a composite pavement being ordinarily formed of either hydraulic concrete or of asphalt concrete. The issues in this case relate to a wearing surface formed of a mixture of mineral aggregate and asphalt. The mineral aggregate gives to the mixture its stability, and the bituminous or asphalt material serves to bind the particles of the mineral aggregate together. To insure the success of the pavement, the body of the wearing surface, particularly at the top, should be as free from voids as possible. To this end, the mineral aggregate for the wearing surface must consist of mineral particles of varying sizes, including large stones, smaller stones, finely-divided mineral matter or sand, and dust. This is because of the physical fact that if the mineral aggregate particles be of a uniform unit size, the total number of voids in the mixture will be about the same no matter what the size of the unit parts. The asphalt which fills these voids has no stability, and in the paving industry any space in the pavement not occupied by mineral matter is termed a void. In preparing the materials for a wearing surface, it was the practice in the prior art, as the broken stone was received from the rock-crusher, to sort the pieces into units of uniform size. Proper proportions

of the various grades of broken stone, together with a sufficient quantity of fine mineral matter (sand, etc.) were then combined to form a mineral aggregate giving the least number of voids. This previously prepared mineral aggregate mixture was then carted to and spread upon the pavement base. A thin surface layer of fine mineral aggregate and asphalt was sometimes laid upon the aforementioned course, this thin layer to serve as a seal-coat for the entire pavement.

The Wallace patent states that it relates to improvements in composite pavements. [R. 18, lines 6, 7, p. 1 of Patent.] The brief for plaintiff-appellant represents that these "improvements" reside in causing the thin top or finishing course to adhere securely to the body of the wearing surface on which it is spread without a sharp or clear dividing line. This construction of the patent in suit is at the foundation of appellant's entire case.

Appellant's position is founded upon a misstatement and misconstruction of the Wallace invention and patent. It was rejected by the District Court, and unless appellant can prevail upon this court to adopt a contrary view, there is no foundation for any of the argument of infringement superposed by appellant thereon. The plain wording of the Wallace patent; the meaning attributed thereto during the application proceedings before the Patent Office, and the prior art,—each and all conclusively refute the contention made by appellant. The Wallace invention, upon which he sought and received the patent in suit, does not reside in merely causing two paving layers to adhere securely

together without a sharp or clear dividing line, but resides in the production of a single layer and the filling of the voids therein. The underlying thought in the Wallace patent is that of getting away from the prior art practice of preparing, before transportation to the base, a complete mixture by proportioning the materials to uniformly fill the voids throughout. In lieu thereof, Wallace suggests taking mineral aggregate just as it comes from a rock-crusher, without any selection or grading of sizes, and spreading the same with the proper amount of asphalt on the road foundation, and then introducing the necessary fine mixture into the aggregate by spreading it over this uncompressed material, and thereafter blending or merging the fine material into the top of the aggregate by subjecting the mass to initial compression. In other words, the Wallace invention consists in a body for a wearing surface into the top of which the necessary fine material to fill the voids has been introduced in the process of laying. The object of the Wallace invention is to avoid the necessity of first preparing a completed and properly graded mixture and then transporting the same to the pavement. Wallace proposes forming the ultimate composition of the body of the wearing surface at the time of, and coincident with, the actual laying of the wearing surface, in lieu of completing the mixture prior to its application to the pavement. It is true that the blending and merging of the fine material into the previously laid body mixture, as prescribed in the Wallace patent, necessarily binds or ties the two mixtures inseparably; but

this tying or adherence of materials is merely incidental to and is not the invention upon which the Wallace patent was granted. The fine material which is blended and merged into the upper part of the body of the wearing surface in the Wallace pavement is that fine material which is to function to fill voids therein, and must be distinguished as distinct and different from a separate course of fine finishing material which is spread upon and maintained as a separate layer above the body of the wearing surface. The Wallace patent prescribes and claims the single layer of a wearing surface formed by the introduction of the necessary fine material into the coarse mixture in the process of application to the pavement. A multi-layer wearing surface—although the top course firmly adheres to the lower course—is diametrically opposed to the theory of the Wallace invention and the plain terms of the Wallace patent. Properly construed, there is no issue of infringement, because appellant does not deny type A wearing surface is multi-layer and follows the prior art practice of preparing the completed mixture for the body of the wearing surface by a proper combination of all the materials therefor, including the fine material, before the same is transported to and spread upon the pavement. Wallace's suggestion to introduce the fine mixture into the body of the wearing surface by blending the same in the process of laying the pavement, is not adopted in type A construction. The thin top course of fine material in type A construction (which must be distinguished from the fine material which has been in-

corporated as part of the body mixture before the same has been transported to or spread upon the pavement), is not to be merged into the body of the wearing surface as the fine constituent thereof, but is to remain superposed above the body of the wearing surface as a top surfacing or sheet.

The primary issue before the court on this appeal is the construction to be given the Wallace patent in suit. Construed as urged by appellees, and as viewed by the District Court, there is not even an issue of infringement. If the Wallace patent is construed as urged by appellant, the further defenses are presented that, so construed, the Wallace patent is both invalid and not infringed. If defendants' type A wearing surface be construed as an infringement of the Wallace patent, the Wallace patent is necessarily invalid, because defendants' type A pavement merely follows the prior art and contains no feature novel with Wallace. The brief for appellant concedes that the prior art contained a composite pavement having the combination of a base, a wearing surface comprising a body or binder course, and a thin top finishing layer thereon. The argument is that type A infringes because this thin top finishing layer is caused to firmly adhere to the body of the wearing surface by the application of the thin layer while the body of the wearing surface is hot. Appellant has apparently unwittingly made the same contention which was precisely overruled, eight years before Wallace applied for his patent, by the United States Supreme Court in *U. S. Repair & Guaranty Co. v. Assyrian Asphalt Co.*, 183

U. S. 590 (46 L. Ed. 342). We note that appellant has not referred in any manner in its brief to this case. The same contention here made by appellant is made in that case, to-wit: it was there contended that the patentee had made an invention in,—and that infringement would reside in,—having paving material hot at the time of the application of a further material in order to produce a bond between the two materials. The Supreme Court said:

“Before the time of either patent the world knew that heat disintegrated some things and melted others, and we cannot concede invention to the thought that that might be true of different kinds of asphalt. Indeed, even in the face of the grave testimony contained in this record given by unquestionably expert men, we find it also difficult to concede that it was an exertion of invention to apply heat to the edges of an excavation to make a bond between the old and the new material.”

To determine the questions presented by this appeal as to the proper construction of the patent in suit, it is first necessary to obtain an accurate knowledge of the prior art in order to ascertain what it was the patentee invented. The District Court found that, in view of the prior art, “there was not much left for the patentee to patent.” [R. 501.] We will first discuss the prior art as showing that a composite pavement comprising a concrete base, and a wearing surface having a binder or body course with a top finishing course thereon, were common in the paving industry long prior to the alleged Wallace invention. We

will discuss at a later point herein the adherence of the top finishing course to the body of the wearing surface in the composite pavements of the prior art. It is unnecessary to discuss various other types of pavement long and extensively employed, such as macadam, brick, cobblestone, unsurfaced hydraulic concrete, etc., because we are here concerned only with composite pavements.

THE PRIOR ART.

It is hardly necessary to state that the use of a mixture of bituminous binders and mineral aggregate in roads is of very ancient date. Prescott, in his "Conquest of Peru," speaks of the fact that a road of such character was built by the Incas from Quito to Cuzco:

"Father Valesco is in raptures with an 'almost imperceptible kind of cement' made of lime and bituminous substance resembling glue, which, incorporated with the stones so as to hold them firmly together like one solid mass, yet left nothing visible to the eye of the common observer. This glutinous composition, mixed with pebbles, made a sort of macadamized road much used by the Incas, as hard and almost as smooth as marble." [R. 163, 164.]

In the United States, thousands of miles of composite pavement of the general type involved in this case was in common use prior to the alleged invention of Wallace. Appellant enjoyed a national business in laying such pavement years prior to the alleged invention of Wallace. The paving industry had estab-

lished certain standard principles and modes of practice and these are followed to the present date.

The court will gain a working comprehension of these prior principles and practices by reviewing defendants' (physical) Exhibit M-11, a treatise published in 1905 (more than two years prior to the application for the patent in suit) by Clifford Richardson, of the New York Testing Laboratory, entitled "The Modern Asphalt Pavement." This book has been utilized to date as the standard authority upon pavements of the character here involved. [Affidavit of Jensen, R. 164.] Without attempting here to enlarge on the contents of this book, it suffices to say that there are described therein the fundamental characteristics of the type of composite pavement involved in this case. Chapter I is devoted to "The Base." Chapter II is headed, "The Intermediate Course." A number of the following chapters discuss the "Surface Mixture." Chapter XIX, entitled "The Street," directs the manner of laying the pavement. Finally, as chapter XXI, the author presents a draft of standard specifications. Mr. Jensen,* the county surveyor of Fresno county, who prepared Defendants' Type A specifications, states:

"I believe it will be evident from a comparison of the aforesaid standard specifications presented by Mr. Richardson, that in preparing the specifications for 'Type A' pavement alleged to infringe

*Mr. Jensen has collaborated with counsel in the preparation of this brief, to the end that the technical matters herein may be accurately portrayed.

herein, I have merely utilized knowledge common in the paving industry prior to 1907 and in fact used nothing original with Wallace.” [Affidavit of Jensen, R. 165.]

The purposes and characteristics of the successive courses employed in a composite pavement are clearly outlined by Mr. Richardson as follows:

“An asphalt pavement consists essentially of a base or support for the surface which is to carry the traffic, itself supported by the soil, and a surface consisting of a mineral aggregate cemented together with asphalt to protect the base from wear and disintegration, between which is commonly interposed either a course of broken stone coated with bitumen, known as binder, or some substitute for it * * *.” (P. 3.)

The base, as stated above, is merely a support or foundation and may be of any construction which will properly carry the weight of the traffic. Richardson states:

“Base of most varied character has been used in the construction of pavements, including broken stone, with or without a coating of more or less bitumen or coal-tar, macadam, old cobblestone pavements, an old surface of granite blocks or blocks turned and reset, old brick or asphalt-block surfaces, and hydraulic concretes of natural or Portland cement of varying thickness.” (P. 6.)

The body of the wearing surface (designated in the art as a “binder course” to distinguish it from a thin surfacing layer of fine material superposed thereon), is designed to relieve the base from shock, distribute

the weight of the traffic over a large area of the base, and act as a bond between the top or finishing layer and the base. [R. 166.] The binder course must be sufficiently compact and stable to successfully resist the compression and shearing strains from the traffic. An asphaltic concrete binder course comprising a mixture of mineral aggregate of various sizes of particles and asphalt, was early adopted in the paving industry. As stated by Richardson:

“The weakness of the ordinary open binder course, where subjected to heavy traffic, can be avoided by filling the voids in the material with fine stone or grit and the remaining voids after this addition, with sand or mineral aggregate corresponding in grading to that of a standard surface mixture.” (Pp. 24, 25.)

The top or finishing course primarily serves as a protection for the remainder of the pavement. It forms a seal-coat to prevent moisture from entering into the body of the pavement and initiating disintegration. The paving industry early adopted for the upper course a mixture of asphalt and finely-divided mineral matter. This gave a certain plasticity to the top of the pavement to withstand the attrition of traffic. It assured that the traffic would not directly contact with the larger stony pieces of the remainder of the wearing surface with resultant fracture and displacement. Richardson described the composition for the finishing course as follows:

“The asphalt surface, which directly carries the traffic and which is intended to withstand the wear

and tear of the same and the action of the elements, is composed of a mineral aggregate and an asphalt cement, that is to say, it is an asphalt mortar or concrete.

“The mineral concrete consists of sand, in exceptional cases also of stone, and a fine mineral dust or filler.” (P. 27.)

In addition to the actual practice in the paving industry and to the technical publications thereon, a large number of patents are found in the prior art pertaining to composite pavements of the type involved herein. It is unnecessary in this case to burden the court with a review of all of these prior patents. Defendants have presented in evidence only a few of the more pertinent patents. In his expert affidavit, Mr. Jensen has carefully reviewed and explained these patents, and, in lieu of repeating his discussion at this point, we will ask the court to read at this point that portion of Mr. Jensen’s affidavit. [R. 163-178.]

We will chance repetition by particular reference to patent No. 375,273, granted December 20, 1887, to C. J. De Smedt, on artificial pavement. [R. 499b.] The De Smedt patent is a good example of the presence in the prior art of the composite type of pavement involved in this case. The patent describes a base made of hydraulic concrete. Upon this base the patent directs that there be laid a binder course B. This binder course B is stated by the patent to consist of:

“* * * I may use gravel and sand mixed together, or combination of broken stone, gravel and sand, when the same is coated with the bituminous compound.” (P. 1, lines 81-84.)

The patent directs that a finishing course C shall be laid upon the binder course B, and the finishing course C is described as follows:

“The top or wearing course, C, is composed of refined Trinidad or other suitable asphaltum, heavy petroleum, or the residuum of petroleum, fine sand, and powdered carbonate of lime, mineral dust, or any other finely-divided mineral material.” (P. 1, lines 90-95.)

The patent states that the binder course B shall be “rolled or compacted in *any* suitable manner, so as to form a *substantial* bed for the top or wearing course, C.” (P. 1, lines 88, 89.)

The patent contains a clear-cut statement of the purposes and advantages of this type of composite pavement, as follows:

“The advantage of a pavement laid in the manner described is that the bituminous matter employed in cementing the broken stone of the middle or binding course B, will cause the wearing surface or top layer, C, to *adhere*, thus forming a *solid or comparatively solid mass*, which increases the strength of the pavement and at the same time will be pliable enough to prevent the cracking of the surface layer.” (P. 2, lines 11-20.)

In practice, the thickness or depth of the various courses of a composite pavement vary in accordance

with the judgment of the person in authority. This was particularly true of the top or finishing course. Richardson states that the specifications for 1886-87 in Washington, D. C., required the top surface to be $2\frac{1}{2}$ inches thick after compression. (P. 20.) By section 32 of Ordinance 240, the city and county of San Francisco, in 1905, adopted specifications calling for a hydraulic concrete base, a binder course of mineral aggregate of descending sizes and asphalt, and a finishing course of sand and asphalt. The finishing course was described as 2 inches thick after compression. These specifications are in evidence as Exhibit C to the affidavit of Mr. Jensen. [R. 187-193.] In his book, Mr. Richardson states that he prefers a finishing course one inch thick. (P. 366.) It was well known in the paving industry to make the top or finishing course relatively thin. Patent No. 675,430, granted June 4, 1901, to F. J. Warren [R. 499f], calls for a top or finishing course denominated E, and described as follows:

“The surface of the roadway may or may not be covered with a *thin* coating of bituminous mixture of sand, gravel, screenings, or gravel mixed with coal-tar or other equivalent material.” (P. 2, lines 31-35.)

Patent No. 727,505, also granted to F. J. Warren [Defendants' Exhibit M-4, R. 499d], calls for “a relatively *thin* surfacing.” (P. 1, line 94.)

Patent No. 748,248, granted December 29, 1903, to Wilson [Defendants' Exhibit M-7, R. 499g], calls for a top or finishing course described as follows:

“A *thin* top dressing ⁷ of a bituminous substance mixed with sand, stone screenings, or the like * * *.” (P. 1, lines 83-85.)

Mr. Jensen testifies in his affidavit:

“The difference in the thickness of the top course is a mere matter of degree. The thicker the top course the longer it will last. So far as the respective functions of the various courses are concerned the same are not altered or changed by any difference in the thickness of the top course. While a thicker top course will last longer, it is necessarily more expensive. I determined upon $\frac{1}{4}$ inch as a thickness for the top course of type A construction because I believe that for its relative expense it is the most desirable.” [Affidavit of Jensen, R. 175.]

It is, therefore, established in this case, and cannot be contradicted, that prior to any invention of Wallace the paving industry was familiar with a composite pavement comprising a base and wearing surface, the latter having a body or binder course and a top or finishing course. The industry was familiar with the fact that the top or finishing course might be made as thin as desired. Before making the alleged invention of the patent in suit, Wallace was thoroughly familiar with the prior art composite pavements and the practices in the industry with regard thereto. For seven years he was in the employ of plaintiff. [R. 90.] As stated at page 13 of the brief for plaintiff-appellant herein, “*The Wallace invention grew out of Wallace’s experience with the Warren pavement of Warren patent No. 727,505.*” The War-

ren patent 727,505 was granted on May 5, 1903, and constitutes the Defendants' Exhibit M-4, R. 499d. The invention of the Warren patent proved to be a most important improvement in the paving industry, and the exact point of the Wallace patent can be most readily ascertained by first becoming familiar with this Warren patent. We will hereafter refer to this patent as the Warren patent, as distinguished from the Wallace patent in suit. It is to this Warren patent that plaintiff owes its position in the industry. Under this patent, plaintiff enjoyed a very lucrative monopoly for seventeen years. In the case of *Warren Brothers v. City of Owosso*, 166 Fed. 309, the Warren patent was held valid by the Circuit Court of Appeals for the Sixth Circuit and infringement enjoined. The limit of the scope of the Warren patent is outlined in the case of *Evans v. Warren Brothers*, 240 Fed. 696, —a much later decision by the Circuit Court of Appeals for the Third Circuit.

The Warren invention is briefly and clearly explained by Judge Dickinson in the case of *Warren Brothers v. Evans*, 234 Fed. 657, as follows:

“The invention is based upon the discovery or recognition of a fact which, however familiar it may be to the initiated, seems so startling to the uninformed mind that there is a hesitation in its statement for fear of misconception. The fact, however, as we understand it, is this: If a delimited space be occupied, as nearly as may be, by broken material of a uniform unit size of the parts of which it is made up, the proportion of

the total volume of the space which will be void or unoccupied by the material will be about the same, no matter what the size of the unit parts. If it is desired to relatively reduce the voids, this result is accomplished, not by reducing the size of the unit parts (still retaining their uniformity), but by varying the sizes of the parts. The desired condition of a road when perfected is that the material of which it is composed should present the feature of a solid mass, in that the whole road space should be free from voids. Time and use direct their efforts toward bringing this about, and would eventually accomplish this result were it not for the faster working disrupting influences of water, frost, and the displacing pressure of heavy travel. This solidity must, in consequence, be produced before the road is used. The ideal construction is then the mosaic. The large voids between the large units to be filled as nearly as may be with units as large as the space will accommodate and to repeat this down to the smallest units, and then to cement the whole by a binder, so that you have a road unit made up of solid material."

The foregoing is set forth in the Warren patent, wherein Warren states that a pavement "must be made as dense, as free from voids as possible, * * *." [Warren patent, p. 1, lines 22, 23, R. 499d.] Warren describes in his patent that a pavement may be made as dense, as free from voids, as possible, by properly selecting and proportioning different grades of mineral aggregate in the manner referred to by Judge Dickinson. Warren claims that by such selection

and proportioning of the grades of the mineral aggregate, he is able to obtain a mixture having less than 21 per cent voids. Warren shows in his patent that until he made his invention the smallest percentage of voids which it had been possible to produce in a wearing surface was "21 per cent." (Warren patent, p. 1, line 45.)

By further reference to the Warren patent, it will be found that his invention was designed particularly for use with the wearing surface commonly employed in the composite type pavement heretofore described. In the drawing of the Warren patent there is illustrated a base B. Upon this base is spread and rolled a binder course A. It is for this binder course that Warren selects and proportions the grades of the mineral aggregate to reduce the percentage of the voids in the binder course below 21 per cent. Warren states in his patent that the binder course "may be covered, if desired, with a relatively thin surfacing of clear asphalt-cement or an asphalt or bituminous composition of any desired nature." (Warren patent, p. 1, lines 93-96.) In figure 3 of the Warren patent drawings there is illustrated a base B, a binder course A, and a top finishing course C.

The method suggested by Warren of decreasing the voids in the body of the wearing surface, to make it dense, solid, stable and freer from voids, was adopted by the paving industry as a standard practice in composite pavements. Plaintiff's Exhibit 8 herein shows that between the year 1910 and August 31, 1921, plaintiff and its licensees laid 43,290,508

yards of pavement under the Warren patent. *The Warren patent expired on May 5, 1920.* At that date the monopoly of plaintiff in the Warren invention terminated and the public acquired the right to use the same free from any further claim. This was the consideration the public acquired for the monopoly theretofore conferred by the Warren patent. Mr. Jensen testifies in his affidavit:

“Upon the expiration of the patent we felt that the composition covered by that patent was free to all. Accordingly that binder course was utilized by me in the specifications for the type A pavement here involved.” (Affidavit of Jensen.) [R. 170.]

It is obvious that in employing the graded proportions for the mineral aggregate set up by the Warren patent, appellees have acted entirely within their rights.

George H. Perkins, of the plaintiff company, in his affidavit herein, explains the Warren invention as follows:

“Warren’s experiment proved:

(1) That in a box (or any other vessel) filled to the brim with particles, each of which was the same size and shape as each other particle, the combined volume of the voids or air spaces between said particles amounted to forty-four (44) per cent of the volume of the box.

(2) That this was true, irrespective of the diameter of the individual particles, that is, this was just as true if each of the particles was $1/1000$ inch diameter, as if they were several inches in di-

ameter. In the former case there was an exceedingly large number of exceedingly small voids, in the latter case a relatively small number of relatively large voids. The total combined volume of voids was the same in either case.

(3) That by mixing together large and small particles, this percentage of voids could be greatly reduced.

(4) That by using sand and pulverized dust as in sheet asphalt surface mixtures, the voids could be reduced to approximately twenty-five (25) per cent of the total volume of the aggregate, but could not be reduced below that amount.

(5) That by using particles of stone, sand and dust varying in size from $1\frac{1}{2}$ " or larger diameter down to impalpable powder the voids could be reduced to less than twenty-one (21) per cent of the total volume of the aggregate. In many cases to 12-15 per cent.

(6) That the extent to which the voids were reduced depended upon the proportion or amount of each size particles used, and that it was practicable by laboratory tests of the material to be used to determine in advance the proportions of each size needed to reduce the voids substantially to a minimum." [R. 119, 120.]

Mr. Perkins describes that the materials for the wearing surface of the Warren pavement were mixed together and laid as follows:

"In the practical working out of his invention Warren found it best practice to use as a maximum size stone, one whose diameter was approximately one-half ($\frac{1}{2}$) the thickness or depth of the wearing surface layer, and as it was customary

to lay the wearing surface two (2) inches thick after compression, this gave a maximum size stone of about one and one-fourth ($1\frac{1}{4}$) inch diameter.

Crushed stone from this size, to that of impalpable powder, and sand were heated and the proper proportions of each size then mixed with sufficient asphaltic cement to thoroughly coat each particle of the aggregate and to fill the few remaining voids in the aggregate. This mixture while still hot was conveyed to the street, spread upon the prepared foundation to such a depth that after thorough compression by a heavy roller it was two (2) inches thick.

By this method of using the proper predetermined proportions of each size of aggregate and amount of asphaltic cement and by the thorough mixing of same, Warren was able to produce a true bituminous concrete so that when compressed upon the foundation the wearing surface layer was uniform in composition throughout its entire depth.

That is the coarse, medium and fine-sized particles were indiscriminately and uniformly distributed throughout the depth of the layer in order to produce uniform density and uniform stability at all points throughout the mass of the wearing surface." [R. 120, 121.]

To visualize the Warren mode of procedure, we will start with the rock-crusher. The product of the rock-crusher is an ungraded agglomeration of pieces of stone of various sizes, together with some powder or dust. As this indiscriminate and ungraded mass is received from the rock-crusher, it is taken and segregated according to the sizes of the particles. All the

large pieces of stone of a unit size are placed into one bin. Separate bins are provided for the various other sized units. The test mentioned by Mr. Perkins is made by a skilled man to determine in advance the proportions of each size needed to reduce the voids. The proper proportions of the large pieces of stone, smaller pieces of stone, and stone-dust, together with the proper proportion of added finely-divided mineral matter (sand), are then introduced into a mixer with sufficient asphalt to coat the particles of the aggregate. After this mixture has been prepared, as stated, it is transported to the street while hot and is then spread upon the previously prepared base. From this it appears that the Warren procedure involved the following:

- (a) Sorting the material into grades of uniform size;

- (b) Determining, by a preliminary test, the proportions of each grade needed to reduce the voids;

- (c) Combining proper proportions of the various grades of material;

- (d) Employing enough added fine material (sand) to make a uniformly dense mass throughout.

The object of the Wallace invention is to avoid the necessity of (a), (b) and (c), and to reduce the fine material required for (d) by restricting the introduction of the fine material to the top portion of the wearing surface.

The Wallace Patent.

“In approaching a patent, we are to look primarily at the thing which the inventor conceived and described in his patent, and the claims are to be interpreted with this particular thing ever before our eyes. In confining our attention too exclusively to a critical examination of the claims, we are apt to look at them as separate and independent entities, and to lose sight of the important consideration that the real invention is to be found in the specification and drawings, and that the language of the claims is to be construed in the light of what is there shown and described.”

(Mossberg v. Nutter, 135 Fed. 95, at 99, Circuit Judge Colt.)

“* * * Such an agreement is interpreted by the same rules that determine the construction of other contracts. The court should, as far as possible, place itself in the situation of the parties when they made their agreement and then seek to ascertain from the terms of their contract, in the light of the circumstances then surrounding them, what their intention was.

“This intention should be deduced from the entire contract and not from any part of it or without any part of it, because they did not agree to it, or to any part of it, without every other part of it. The specification which forms a part of the same application as the claims must be read and interpreted with them, not for the purpose of limiting, or of contracting, or of expanding, the latter, but for the purpose of ascertaining from the entire agreement, of which each is a part, the actual intention of the parties and

that intention when ascertained should prevail over the dry words and inapt expressions of the contract evidenced by the patent, its specification and claims.”

(*Century Elec Co. v. Westinghouse Elec. & Mfg. Co.*, 191 Fed. 350, at 354, C. C. A. 8th.)

In the Wallace patent the inventor states:

“The invention alluded to consists in a *process of producing a pavement* and in the pavement, *the product of the process*, and for the sake of convenience and brevity I will describe in detail the fabrication of the pavement from which description considered conjunctively with the lettered drawing both the process and the pavement produced by the practice of the process will be fully understood.” [Wallace patent, p. 1, lines 29-38, R. 8a.]

In describing his process of producing the pavement and the product of that process, Wallace first explains that he employs a base or foundation A. The Wallace patent is not concerned with any particular style or type of base, and merely states that the base may be of any kind,

“* * * consonant with the purpose of my invention.” (Wallace patent, p. 1, line 42.)

Upon this base the patent specifies that there shall be spread, without compression, the body mixture B of a wearing surface. In lieu of employing for this mixture B a predetermined graded aggregate, Wallace proposes using the ungraded product of a rock-crusher. This is described in the Wallace patent, in the state-

ment that he uses for the mixture B a mineral aggregate which is made up of:

“* * * stone of a size to pass through the interstices of a screen giving a stone, the largest of which is the maximum size desired, and this stone, together with smaller pieces of stone and comminuted stone or dust, * * *.” (Wallace Patent, p. 1, lines 47-52.)

and that this stone is unproportioned, and is merely
“* * * in the state that the whole run is discharged from a crusher. * * *.” (Wallace patent, p. 1, lines 52, 53.)

This ungraded product of a rock-crusher, he explains, is then mixed with a proper quantity of bituminous material and spread, without compression, upon the foundation A (Wallace patent, p. 1, lines 53-57). Since the units of the aggregate for the mixture B have not been graded or combined in proper predetermined proportions, and the necessary amount of sand has not been added, the mixture B as spread on the base A will be replete with voids. These voids may be readily seen in the drawing of the Wallace Patent.

Wallace's long experience in the paving industry advised him that the above mentioned voids must be filled at least at the top of the body of the wearing surface in order to give to the pavement the required denseness necessary for a rigid and stable structure. Accordingly, he provides in his patent that the necessary fine material shall be introduced into the body of the wearing surface by spreading a mixture C of sand (or the like) and asphalt over the mixture

B before there has been any compression thereof. After the fine mixture C has been spread, a heavy roller is passed over the pavement, driving the fine mixture C into the mixture B to fill the voids at least in the upper portion of the wearing surface. The Wallace patent states that the mixture C is

“* * * a mixture produced by commingling either sand or crusher screenings (comminuted stone) or both with sufficient bituminous or asphalt cement to form a homogeneous mass.”
(Wallace patent, p. 1, lines 59-63.)

To enable the merging of the mixture C into the mixture B the Wallace patent reiterates, in seven different places, that the mixture C must be spread before there has been any compression of the mixture B:

1. At page 1, lines 64-67, the patent describes that the mixture C shall be spread

“* * * in a thin coat or layer over the course B laid as before described *but not compressed* or subjected to pressure or tamping,
* * *.”

2. At page 1, lines 70-72, the patent continues by directing that the materials comprising the mixtures B and C are thereupon subjected

“* * * to *initial* pressure or compression, preferably by moving a heavy roller over the same, * * *.”

3. At page 1, line 86, it is stated that the mixtures B and C are

“* * * pressed, by the *single* compression referred to, * * *.”

4. At page 1, line 109, it is again stated that the mixture C is raked in a thin layer over the mixture B and brought to a true surface

“* * * *before* the application of the *only pressure* to which the composite pavement is subjected.”

5. At page 1, line 111, to page 2, line 8, the patent *disclaims* the rolling of the mixture B prior to the laying of the mixture C, as follows:

“In this connection it will be appreciated that the *single compression* of the whole mass simplifies and cheapens the production of the pavement, and instead of preventing or interfering with the adherence of the upper course to the lower course (as is the case when the lower course is rolled *or otherwise pressed* precedent to the application and pressing of the upper course) * * *.”

6. At page 2, line 26, the patent reiterates that the mixture C is added to the mixture B “*before compression*” of the mixture B.

7. At page 2, line 53, it is again stated that the mixture B is laid “*without compression.*”

The wording of the Wallace patent throughout conclusively shows that the invention resides in the production of a single layer the voids of which have been filled at the upper portion by the blending of fine material thereinto in the process of laying the pavement and without the necessity of following the Warren procedure of grading and proportioning the constituent sizes. The wearing surface of the Wallace pavement

is definitely restricted throughout the Wallace patent to a *single homogeneous layer*. The specification of the Wallace patent states that from the

“* * * description considered conjunctively with the lettered drawing both the process and the pavement produced by the practice of the process will be fully understood.” (Wallace patent, p. 1, lines 34-38.)

While the specification of the Wallace patent states that the drawing is intended to show a portion of a pavement produced in accordance with the Wallace invention (p. 1, lines 24-27), and illustrates a base A, a lower mixture B, and a surface mixture C (p. 1, lines 39-46), the specification further states:

“Attention is here invited to the fact that while I describe the pavement made in accordance with my invention as having two courses B and C, the completed pavement is not a multi-layer pavement, but on the other hand the two courses are practically pressed, by the single compression referred to, into a single mass.” (Wallace Patent, p. 1, lines 80-87.)

In this manner, the Wallace patent states, there is provided

“* * * a dense surface layer or course without in any way proportioning the amount of fine material used in connection with the coarser stone.” (Wallace patent, p. 1, lines 76-79.)

and thereby Wallace proposes to attain his avowed object of producing a wearing surface

“* * * expeditiously laid at small cost of skilled-direction, apparatus, labor and material,
* * *.” (Wallace patent, p. 1, lines 12, 13.)

These advantages are stated by Wallace for his invention:

“Among other advantageous characteristics of my invention, it may be stated that only little apparatus is required for the mixing and that of inexpensive character; that only slight care is required in handling and laying the materials; that inasmuch as the fine mixture in the thin or surface course B is used at the surface only instead of being distributed throughout the whole mass a comparatively small quantity of the fine mixture is required; * * *.” (Wallace patent, p. 2, lines 12-22.)

In other words, the object and advantage of the Wallace invention is to eliminate the prerequisites of the Warren procedure above mentioned:

(a) Sorting the material into grades of uniform size;

(b) Determining, by a preliminary test, the proportions of each grade needed to reduce the voids;

(c) Combining proper proportions of the various grades of material;

(d) Employing enough added fine material (sand) to make a uniformly dense mass throughout.

A patent, like any other written instrument, is to be construed as a whole, and strictly in accordance with that rule we find that not only do the specification and drawing of the Wallace patent set forth the afore-said as the Wallace invention, but so also is that invention defined and stated in the claims of the Wallace

patent. Claim 2 of the Wallace patent is solely relied upon by appellant on this appeal. Claim 2 states that the mixture B is:

“* * * made up of large pieces of stone, smaller pieces of stone and stone dust, mixed with sufficient bitumen of proper consistency to thoroughly coat all the particles, * * *.” (Wallace patent, p. 2, lines 66-70.)

The mixture B as defined in claim 2 corresponds precisely to the mixture B as set forth in the specification of the Wallace patent, to-wit:

“* * * stone of a size to pass through the interstices of a screen giving a stone, the largest of which is the maximum size desired, and this stone, together with smaller pieces of stone and comminuted stone or dust. in the state that the whole run is discharged from a crusher, I mix with sufficient bitumen, of proper consistency, to form a homogeneous mass, * * *.” (Wallace patent, p. 1, lines 47-58.)

Both in the specification and in the claim, the mixture B is defined as made up of large and small pieces of stone and stone-dust. *The required amount of added fine mineral matter, i. e., sand, is not present in mixture B when spread prior to mixture C.*

The mixture C is defined in claim 2 as

“* * * made up of finely-divided mineral matter mixed with sufficient bituminous binding material to thoroughly coat all of the particles, * * *.” (Wallace patent, p. 2, lines 71-74.)

This corresponds with the description in the specification, of the constituents of the mixture C:

“* * * a mixture produced by commingling either sand or crusher-screenings (comminuted-stone) or both with sufficient bituminous or asphalt cement to form a homogeneous mass. * * *”
(Wallace Patent, p. 1. lines 59-63.)

Claim 2 describes that the mixture C is “blended” with the mixture B “at the top of the mass,” thereby referring to the introduction into the wearing surface of the required additional finely-divided mineral matter or sand to fill the voids immediately at the top. There can be no doubt as to the accuracy of the latter statement, in view of the concluding clause of claim 2, which reads as follows:

“* * * whereby the two layers are bonded into one and a compact rigid layer densest at the top is formed.”

Claim 2 thus describes that the completed wearing surface is comprised of “a compact rigid layer,” and that this layer is to be “densest at the top.”

In addition to the fact that the description and claims of the Wallace patent are clear that the basis of the Wallace invention was the introduction of the necessary fine mixture into a coarse mixture by blending the former into the top of the latter in the laying of the pavement, the position of appellees is fully supported by the proceedings had in the Patent Office in connection with the application for the Wallace patent. It is well settled that a patent should be in-

terpreted and construed in the light of the proceedings in the Patent Office had on the application for the patent

“Letters patent may be construed in the light of the contemporaneous intention of the inventor and of the Patent Office; and to this end recourse may be had to the files of the application papers to see what changes were made in the description and claims while the application was pending in the Patent Office.” (Walker on Patents, 5th Ed., p. 254.)

The File Wrapper of the Patent in Suit.

We find on an examination of the file wrapper [R. 431-480], that the application for the Wallace patent in suit was rejected six successive times by the Patent Office. During the proceedings on this application, many and various claims were inserted by Wallace and were rejected and cancelled. To induce the allowance of the claims as finally procured in his patent, Wallace attributed to their terms a certain definite meaning, and disclaimed any intention to cover anything else. Under such circumstances, it is well settled that the patentee is limited to the precise features upon which he secured the allowance of his patent. This has been the established doctrine in this circuit. (*Cole v. Hookstratten Cigar Co.*, 250 Fed. 629, C. C. A., 9th Cir.; *Wilson & Willard Mfg. Co. v. Union Tool Co.*, 249 Fed. 729, C. C. A., 9th Cir.; *W. F. Schultheiss c. Phillips*, 264 Fed. 971, C. C. A., 9th Cir.).

From the file wrapper of the Wallace patent it definitely appears that:

First: Wallace disclaimed any intention to cover a pavement where the mixture B had been compressed prior to the spreading of the mixture C.

The application for the Wallace patent as originally filed in the Patent Office contained four claims. Two of these claims were for a process of laying the pavement, and the other two for the pavement as a produce of the process [R. 436, 437]. On August 23, 1909, the Patent Office rejected all of these four claims on prior patents to Malette, Hassam, and Hutchinson [R. 440, 441]. In reply to this rejection, Wallace, on September 15, 1909, filed an amendment cancelling the first two of the claims submitted with his application, and limiting the remaining claims by inserting:

“* * * initially compressed simultaneous with the lower course and thereby tied or bound thereto.” [R. 442, 443.]

Accompanying this amendment, Wallace made an argument for the amended claims, in which he pointed out that the Hassam patent described a rolling of the lower layer before the spreading of the upper layer and, therefore, did not disclose the novel feature invented by Wallace. The following extremely important and conclusive statement appears in this argument of September 15, 1909:

“‘The rolling of the stone before the second course or binder is applied’ alluded to by the Ex-

aminer would defeat the aforesaid end that applicant seeks to attain, and is expressly disclaimed in applicant's specification, page 5, lines 4 to 12." [R. 444.]

The disclaimer in the Wallace patent referred to in the foregoing statement appears at page 1, line 11, to page 2, line 12, of the patent as finally granted and printed, and reads:

"In this connection it will be appreciated that the single compression of the whole mass simplifies and cheapens the production of the pavement, and instead of preventing or interfering with the adherence of the upper course to the lower course (as is the case when the lower course is rolled or otherwise pressed precedent to the application and pressing of the upper course) is utilized to effect a bonding of the upper course to the lower course for the purpose before described, and to render the whole mass compact and durable."

Under well settled law, having admittedly "disclaimed" a pavement where the intermediate course is rolled prior to spreading the surface-coating, Wallace cannot obtain for his patent a scope which would include a pavement embodying such rolling. This is a conclusive answer to the argument in plaintiff's brief that claim 2 of the Wallace patent can by a forced construction of the language be interpreted to cover a pavement embodying such rolling. To grant the Wallace patent such a scope would be countenancing a deliberate fraud on the Patent

Office and public, because by his disclaimer Wallace has obtained his patent on the ground that it did not cover pavement employing such rolling.

In *Weber Electric Co. v. E. H. Freeman Elec. Co.*, 256 U. S. 668, (65 L. Ed. 1162), following a rejection by the Patent Office the patentee amended his claim by adding certain limitations, and in an accompanying argument, headed "Remarks," pointed out that his invention eliminated a certain "rotation" involved in the prior art. Having procured his patent, the patentee then sought to bind as an infringement a device embodying the very rotation he had thus disclaimed. The situation was the same with regard to the "rotation" in that case as it is in regard to the individual rolling of the mixture B in the case at bar. The Supreme Court held that the patentee was bound by his disclaimer, and affirmed a decree of non-infringement:

"Having thus narrowed his claim against rotary movement in order to obtain a patent the patentee may not by construction, or by resort to the doctrine of equivalents, give to the claim the larger scope which it might have had without the amendments, which amount to a *disclaimer* of rotation as an operative feature of his device. *Shepard v. Carrigan*, 116 U. S. 593, 598, 6 Sup. Ct. 493, 29 L. Ed. 723; *Hubbell v. United States*, 179 U. S. 77, 80; 21 Sup. Ct. 24, 45 L. Ed. 95."

On numerous other occasions in replying to actions of the Patent Office on his application, Wallace set forth that spreading the mixture C *prior to compres-*

sion of the mixture B *was essential* to the achievement of his invention. No reference was ever made to any other way or mode of laying the pavement, and at numerous points Wallace stated that if that order of laying was not followed, a pavement of the type sought by him could not be attained.

Second: Wallace understood and intended that the claims as finally granted in his patent be limited to a single layer in which the voids at the top of the mass were filled by blending therinto the fine mixture C.

During the entire progress of the application for the Wallace patent, the Patent Office steadfastly refused to recognize as patentable the mere feature of the firm adherence of two layers of a wearing surface along a juncture-line. For example, by an amendment filed October 26, 1909, the following claim was submitted:

“A pavement comprising a foundation, a lower course thereon made up of large pieces of stone, smaller pieces of stone and stone dust commingled with sufficient bitumen of proper consistency to render the course a homogeneous mass, and an upper thin course thereon made up of finely divided material commingled with sufficient bituminous or asphaltic cement to render the upper course a homogeneous mass; the bitumen and stone dust of the lower course being united with the bituminous or asphaltic cement of the upper course and the two courses being thereby connected together.” [R. 447.]

This claim was rejected by the Patent Office as unpatentable, in an action mailed November 11, 1909.

[R. 449, 450.] The claim was thereupon cancelled by Wallace, in an amendment dated November 23, 1909, and claim 2 in suit was substituted therefor. [R. 451.] The rejection and cancellation of the aforesaid claim brings this case directly within the rule reiterated by the Supreme Court in *Computing Scale Co. v. Automatic Scale Co.*, 204 U. S. 609, 51 L. Ed. 645:

“Before taking up the record as disclosed in file wrapper and contents we may premise that it is perfectly well settled in this court by frequent decisions that where an inventor, seeking a broad claim which is rejected, in which rejection he acquiesces, substitutes therefor a narrower claim, *he cannot be heard to insist that the construction of the claim allowed shall cover that which has been previously rejected.* Corbin Cabinet Lock Co. v. Eagle Lock Co., 150 U. S. 38-40, 37 L. Ed. 989, 990, 14 Sup. Ct. Rep. 28, and cases there cited.”

In its brief (p. 89) appellant correctly quotes the following as the additional limitation incorporated in claim 2 of the Wallace patent as allowed:

“* * * ‘blended with’ the lower course ‘at the top of the mass, whereby the two layers are bonded into one and a compact rigid layer, densest at the top, is formed.’”

But appellant then proceeds to misconstrue the same by stating that its “net result” is the “blending of the two courses.” To accord this construction to claim 2 of the Wallace patent, it must terminate with the phrase “blended with the coarse mixture.” Appellant’s

construction totally ignores the further and additional limitation:

“ * * * * whereby the two layers are bonded into one and a compact rigid layer, densest at the top, is formed.”

A claim embodying the mere “blending” referred to by appellant, was made by Wallace in an amendment filed February 21, 1910 [R. 467], was rejected by the Patent Office on March 15, 1910 [R. 471-473], and was cancelled by an amendment filed March 18, 1910 [R. 474.] This rejected claim reads as follows:

“3. A pavement consisting of a lower course composed of intermixed stone and cementitious medium initially laid on a suitable foundation without compression, and a thin upper course composed of a mixture of previously prepared finely divided mineral and bituminous matter of desired consistency superposed on the lower course after the latter has first been laid and thereafter blended into intimate relation with and bounded to the upper part of the lower course by pressure.” [R. 467.]

It is, therefore, obvious that the limitation in Claim 2 of the Wallace patent, to which the Patent Office accorded patentability as distinguished from the prior rejected and cancelled claims, does not reside in the “blending” if construed with reference to merely causing a firm adherence of the mixture C to the mixture B. The limitation distinguishing between the allowed claim and the rejected claims must reside in the further limitation that a single layer densest at the

top is formed. This undoubtedly refers to the feature of the Wallace invention which relates to providing a single layer wearing surface by introducing into the ungraded coarse mixture B the necessary fine material C in the process of laying the wearing surface. The representations and delineations made to the Patent Office by Wallace, and found in the file wrapper of the Wallace application, fully demonstrate the correctness of the position of appellees. In an amendment of September 16, 1909, Wallace stated:

“* * * the upper course is bound to the lower course as a whole and assures a dense surface course without in any way proportioning the amount of fine material used in connection with the coarser stone.” [R. 443.]

Here is a clear statement that by “dense” in his patent, Wallace refers to filling the voids at the top of the coarse mixture B and thereby obtaining a structure dense at the top without following the Warren method of proportioning the mineral aggregate. Again, in an argument contained in an amendment filed in the Patent Office on February 5, 1910, Wallace states:

“Applicant further wishes to emphasize the fact that while McDonald attempts to fill the voids to repletion throughout the mass he (applicant) does not attempt to fill the voids except in the upper portion of the mass, *i. e.*, the part of the surface subjected to the abrasive action of the traffic.
* * *” [R. 463.]

This is a proposition personally advanced to the Patent Office by the patentee, Edwin C. Wallace, be-

cause, at the head of this argument, the attorney for Wallace states:

“The applicant being a practical man in the pavement line and the action of Jan. 27, 1910, having been submitted to him, the Examiner’s attention is particularly invited to his reasons why he believes the new claim 1 to be patentable over McDonald, * * *.”

The inventor has thus pointed out that his invention is novel because he “does not attempt to fill the voids except in the upper portion of the mass.” In construing the claim as it finally appears in the patent, the court, under elementary principles of patent law, will adhere to this interpretation of the claim as made by the inventor to the Patent Office.

“When applicant put a construction upon a claim phrase in order to distinguish from a reference and get an allowance, he should be held to that construction.”

(Tee Pee Rubber Co., Inc. v. I. T. S. Rubber Co., 268 Fed. 250 (C. C. A. 6th.)

It is thus perfectly apparent from the file wrapper of the proceedings before the Patent Office, that the Patent Office refused to grant Wallace a patent on merely producing a firm adherence of a surface mixture C to a coarse mixture B by producing a zone of blending along their line of juncture. The Patent Office required Wallace to limit his claim to his only patentable invention, *i. e.*, blending fine material into a coarse mixture to fill the voids at the top of the

mass, so that the resultant mass was densest at the top, and only granted a claim therefor after Wallace had placed of record a statement that he so interpreted and understood the claim.

In its brief, appellant urges that the proceedings of record in the file wrapper of the patent in suit "have no such effect as defendants claim" for three reasons. (Appellant's brief, pp. 45-47.) "In the first place" appellant states that the rolling or compression of the lower course which Wallace disclaimed was the "regular normal thorough compression universally practiced in the prior art" and not a mere "*initial*" compression. This is not true. Obviously, the compression which will force the fine material into the voids of the lower mixture is that first or initial compression which permits of a relative movement of the materials before the lower mixture has become so consolidated as to prohibit penetration of the fine material. There is no doubt that such an initial compression of the coarse mixture prior to the spreading of the fine mixture thereon is the compression which Wallace disclaimed. The specification of the Wallace patent states that the materials are subjected "to *initial* pressure" after the spreading of the fine mixture C (p. 1, line 70). In the "Remarks" accompanying the amendment filed in the Patent Office on September 16, 1909, Wallace says:

"* * * the lower and upper courses are defined as initially pressed together after the placing of the latter on the former, * * *."
[R. 443.]

In the "Remarks" accompanying the amendment filed in the Patent Office on October 26, 1909, Wallace says:

"* * * when the two courses are subjected to the initial compression * * *." [R. 448.]

In the amendment filed in the Patent Office on November 23, 1909, Wallace directed the Patent Office to amend the specification of his patent by inserting the phrase:

"The desirable ends stated are due to the fact that the initial compression * * *," etc. [R. 451.]

In the "Remarks" accompanying the amendment filed in the Patent Office November 23, 1909, Wallace said:

"* * * the essential feature of applicant's process—viz.: the placing of the upper course on the lower course previous to *any* rolling or compression, * * *." [R. 454.]

and again, in the same paper, stated:

"* * * it follows that when the McDonald pavement is subjected to the initial pressure the upper course and lower course will not be blended together * * *," etc. [R. 455.]

In the argument accompanying the amendment filed in the Patent Office on December 21, 1909, Wallace again used, and in fact underlined, the word "*initial*" [R. 459.] In the argument accompanying the amendment filed in the Patent Office on February 7, 1910, Wallace refers to

“* * * then *initially* as for the first time compressing the two courses * * *” [R. 462]

again underlining the word “*initially*.” Clearly, Wallace appreciated that the initial or first compression of the two materials is the compression which must cause the merging of the fine material into the coarser mixture before the compression has proceeded to a point which consolidates the materials, and there is no doubt, from his repeated use of the term “initial compression” that the *first* answer of appellant to the file wrapper is not founded on fact.

“Secondly,” appellant states that the references quoted from the file wrapper.

“* * * in almost all, if not in all, cases related to Wallace’s process and not to his product.” (Appellant’s Brief, p. 46.)

This is erroneous. For example, in the amendment filed in the Patent Office on September 16, 1909, Wallace amended original claims 3 and 4. Each of these claims is for the pavement, the preamble thereof reading: “A pavement comprising a foundation, * * *,” etc. These claims had been theretofore rejected by the Patent Office on the Hassam patent. In the “Remarks” accompanying the amendment, Wallace said:

“Claims 3 and 4 are now free of the formal objection urged against said claims as originally presented, and are thought allowable because Hassam does not anticipate the lower and upper courses initially compressed together * * *,” etc. [R. 44.]

Claims 3 and 4 were again rejected by the Patent Office on the Hassam patent, and in an amendment filed October 26, 1909, they were cancelled by Wallace. By such amendment, Wallace substituted as claim 2 an additional and new claim for the pavement, the preamble of which reads: "A pavement comprising a foundation, * * *," etc. [R. 447.] In the "Remarks" accompanying this amendment, Wallace said:

"* * * when the two courses are subjected to the *initial* compression the bitumen and stone dust of the one are united to the bituminous or asphaltic cement of the other and the two courses are tied or bonded together." [R. 448.]

and as to claim 2, said that

"* * * it is thought to be allowable for the reasons hereinbefore set forth as warranting the allowance of claim 1." [R. 448.]

This claim 2 was rejected by the Patent Office on the Hassam patent [R. 449, 450]. By the amendment filed November 23, 1909, Wallace presented as a substitute claim the claim which now appears as claim 2 of his patent. With this claim, he directed that his specification be amended by the phrase:

"The desirable ends stated are due to the fact that the *initial* compression of the lower and upper courses together forces the fine mixture to blend with the coarse mixture at the top of the mass." [R. 451, 452.]

It is certainly untrue that the representations made concerning the importance of avoiding an initial rolling

of the coarse mixture prior to the spreading of the fine mixture, only related to the "process," as urged by appellant. In fact, it was repeatedly and deliberately stated to the Patent Office that unless the fine mixture be spread prior to compression of the coarse mixture the Wallace product could not be produced.

"In the third place," appellant states that "it is quite immaterial under the authorities what the applicant may or may not have *argued* in the Patent Office." (Appellant's brief, p. 46.) Appellant states that a leading case on this point is the decision of this court in *Fullerton Walnut Growers Association v. Anderson*, 166 Fed. 443 (Appellant's brief, p. 83). Appellant is apparently not advised as to the decision filed by this court on June 4, 1923, in *Lorraine v. Townsend et al.*, No. 3945 (not yet reported.) The opinion of this court in the last cited case quotes extensively from the arguments made to the Patent Office and embodied in the file wrapper of the patent there in suit. In the brief in that case for the plaintiffs-appellees, the decision of this court in the Fullerton Walnut Growers' Association case is cited and quoted practically in the words employed by appellant in this case (see brief for plaintiffs-appellees in Case No. 3945, pp. 41, 42). The further decisions cited on this point by appellant in *Auto Pneumatic Action Co. v. Kindler & Collins*, 247 Fed. 323; *American Caramel Co. v. Thomas Mills & Bro.*, 149 Fed. 743; *Boyer v. Keller Tool Co.*, 127 Fed. 130, and *Spalding v. Wanamaker*, 256 Fed. 530, were all cited by appellees in said Case

3945. Appellees there argued: "Mere argument to the Patent Office, if not reflected in the claims, is immaterial." (Brief, p. 41.) In the decision of this court rendered by District Judge Dietrich, Judges Gilbert and Rudkin concurring, this court ruled that what the patentee has said upon his application for a patent is relevant and material upon the construction to be given to the patent. This court there said:

"This being the limitation put by him upon the breadth of his claims for the purpose of avoiding interference in procuring the patent, how can he now be heard to say that the claims may properly be read upon the appellant's device, where admittedly the oil is agitated and broken up? We are not to be understood as intimating that correspondence between an applicant and the Commissioner of Patents, or statements made *in arguendo* can be invoked to add to or vary the language of a patent. A patent, like other written instruments, is to be interpreted by its own terms. But when upon its face it is fairly susceptible to different constructions, resort may be had to the meaning put upon it by the patentee while his application was pending. '(But) when a patent bears upon its face a particular construction, inasmuch as the specifications and claim are in the words of the patentee, it is reasonable to hold that such a construction may be confirmed by what the patentee said when he was making his application. The understanding of a party to a contract has always been regarded as of some importance in its interpretation.' *Goodyear Dental Vulcanite Co. v. Davis*, 102 U. S. 222, 227. In this view we do not enlarge, diminish, or vary the language of the

patent, but only adopt a construction to which it is fairly susceptible, and which, to induce the allowance of his claims, the applicant urged as his understanding of their true intent and meaning.”

As this is the latest ruling on the point by this court, we may safely assume that it is established law in this circuit.

In the case of *Selectasine Patents Co. v. Prest-O-Graph Co.*, 282 Fed. 223, this court (Judges Gilbert, Ross and Hunt), said:

“We were always in accord to the extent that the patentee cannot escape from the position which he took before the Patent Office, and the consequence of not having appealed from the action of the Patent Office; * * *.”

Defendants' Type “A” Wearing Surface.

Contrary to the assertions made in the brief for plaintiff-appellant, the fact is that the county of Fresno has never employed the Wallace invention of the patent in suit. The body of the wearing surface on the Fresno county highway system (both Type A and Type B) has been prepared in accordance with Warren Patent 727,505, employing the very mixture for which the Wallace patent is designed to furnish a cheap substitute. In his affidavit herein, Mr. Jensen, the Fresno county surveyor and engineer, states that prior to the expiration of the Warren patent, the county of Fresno paid the royalty demanded by appellant under the Warren patent. Mr. Jensen states

that upon the expiration of the Warren patent, the county of Fresno was of the opinion that the composition covered by that patent was free to all. Accordingly, the same was utilized by Mr. Jensen in the preparation of the specifications for the Type A wearing surface here involved. [R. 170.]

Until shortly prior to the expiration of the Warren Patent 727,505, appellant, through its representatives, insistently asserted that the wearing surface of that patent was the most practical, and discouraged any departure therefrom. [R. 149.] However, shortly before the Warren patent was to expire, appellant introduced, and began lauding as superior to the Warren construction, a wearing surface of the type embodied in the Type B specifications herein. [R. 149.] The specifications for the Type B wearing surface appear at pp. 41-49 of the record herein.

Much of the argument contained in the brief for appellant, by which infringement is sought to be established herein, consists in a comparison of these Type B specifications and the wearing surface produced thereby, with the Type A specifications and wearing surface. In making such comparison, appellant assumes that the Type B wearing surface is that patented in the Wallace patent in suit. The Type B wearing surface does embody one of the essential features of the Wallace patent in suit, to-wit: spreading a fine mixture C upon the coarse mixture B prior to compression of the latter, and thereafter blending the same therein. Type B specifications provide that the fine mixture C shall be

spread on the coarse mixture B “immediately” after the mixture B “has been spread and before it has been compacted in any manner.” [R. 42.] Although in the last stated particular Type B wearing surface coincides with the Wallace patent in suit, the Type B wearing surface does not employ the Wallace substitute for the Warren mixture and, therefore, is not that patented in the patent in suit. There is no evidence in the record that the wearing surface described in the patent in suit has ever been successfully employed.

Upon the introduction by appellant of the Type B wearing surface, it was given a full and fair trial by the county of Fresno. Some sixty miles of Type B wearing surface were laid, and the results obtained carefully observed. The brief for appellant represents that the Type A wearing surface was developed because of the county of Fresno learning of the utility and merit of the wearing surface of the patent in suit from this sixty miles of Type B wearing surface. (Appellant’s brief, pp. 20-22.) Quite the opposite is true. Because of the failure of this sixty miles of pavement, the further use of Type B specifications in the county of Fresno was condemned by the county surveyor and the board of supervisors, and Type A adopted. Mr. Jensen testifies:

“Under my supervision the county of Fresno utilized this Type B construction on Ventura avenue, Route 15, and White’s Bridge avenue, Route 1, Fresno County Highway System. This surfacing was inspected and approved as laid by a rep-

representative of plaintiff, Warren Brothers Company. I observed during this construction that the finishing course (course C) is in fact pressed or merged completely into the binder course (course B), so that there protrudes at the top of the completed wearing surface a material percentage of the stone pieces spread as constituents of the course B. To illustrate the foregoing, I submit as Defendants' Exhibit A herewith a specimen of completed wearing surface removed during the first week of June, 1921, from said Ventura avenue, Route 15. [R. 158, 159.]

* * * * *

"I have found from my observation and supervision of the construction of approximately sixty miles of pavement by the aforesaid Wallace method that the same presents certain serious objectionable features. In the first place it is not possible to properly and evenly distribute the material of course C upon the course B if the course B has not been compressed. This is due to the fact that the uncompressed upper surface of the course B will be irregular and when the material for the course C is spread or raked thereon necessarily such material will not be uniformly distributed. In fact, I have observed large areas of the finished pavement wherein the mixture of course B is uncovered or exposed and other areas where the mixture of course C is as thick as one-half inch. I have found that this irregular distribution of course C impairs the smoothness of the riding surface because upon compression there will result an unequal compacting due to the different percentages of voids in course C as compared with course B. This produces a

tendency of the pavement to wave under the action of the roller. This tendency to wave is continued and aggravated under the stress of traffic because the riding surface will not be of uniform density due to the irregular distribution of course C.

“A further serious objection to the method and resultant pavement illustrated in the patent in suit is the appearance or protrusion at the riding surface of a material percentage of stony pieces from course B. As heretofore described this is a necessary result had if the courses B and C are blended together so that the resultant mass is densest at the top, and I have found that in practice with pavement laid in accordance with the aforesaid specifications, Type B (viz. in accordance with the patent), a material percentage of such stones do so protrude. This is so serious an objection from a practical standpoint to the durability of such pavement that in my opinion the same should be condemned as an inefficient structure. Any stony pieces protruding at the riding surface will take direct contact with the traffic. Such stony pieces being rigid will not have the flexibility inherent in a mixture of finely divided mineral matter mixed with bituminous materials. The stone pieces will therefore be subject to fracture and displacement. Thereby the riding surface will become disintegrated and susceptible to raveling. Furthermore, each of such stony pieces constitutes an opportunity for the entrance of moisture into the structure and defeats the function of the wearing surface as a seal coat.” [R. 161-163.]

This testimony of Mr. Jensen is fully corroborated by the testimony of Mr. Leyden, the chief inspector for the Fresno County Highway System, who testifies:

“With ‘Type B’ construction it is impossible to obtain a uniform distribution of the top or finishing mixture. This is due to the fact that the uncompressed binder course presents a very irregular surface upon which it is impossible to uniformly spread the mixture for the finishing course. I have found this results in the mixture for the finishing course varying greatly in thickness from $\frac{1}{2}$ inch down to so slight a thickness that it does not cover the large rocks of the binder course. Upon compression of the ‘Type B’ pavement the rocks or large stony pieces from the binder course protrude at the top of the pavement and the riding surface has a tendency to wave, due to the uneven distribution of the finishing course. It is elementary that the riding surfaces of any asphalt concrete pavement should have no tendency to wave, as such tendency will be aggravated in use. Furthermore, the appearance at the riding surface of stony pieces will result in their fracture and displacement, due to their rigidity. This will produce a rapid disintegration of the riding surfaces and will render it susceptible to raveling. One of the most important functions of a top finishing course is that it may provide a seal coat for the rest of the pavement. With ‘Type B’ construction the function of a seal coat is destroyed because each stony piece protruding at the top of the pavement will provide an entrance point for moisture.”
[R. 147, 148.]

The specifications for Type A wearing surface were prepared by Mr. Jensen in the light of the unsatisfactory results obtained with Type B wearing surface. For the Type A wearing surface, Mr. Jensen went back to the expired Warren Patent 727,505. Following the Warren method of reducing the voids, under "Item 2" of Type A specifications, Mr. Jensen prescribed the proper proportions of the crushed stone, gravel, sand, and dust, which, together with the proper amount of asphalt, should be combined to uniformly reduce the voids throughout the body of the wearing surface. [R. 35.] The Type A specifications provide that this mixture shall be prepared in the following manner:

"Each batch of asphalt concrete shall be combined and mixed in the following manner: That portion of the mineral aggregate passing a $\frac{1}{2}$ " screen, including 200-mesh material, shall be placed in a mechanical mixer, of an approved type in proper proportions, together with 75% of the asphaltic cement specified to be used, and mixed for at least fifteen (15) seconds. The remainder of the asphaltic cement, and the remainder of the mineral aggregate properly proportioned, shall then be added, and the entire mixture shall then be mixed until every particle of stone, sand, and dust, is thoroughly coated with asphaltic cement. The minimum length of time during which all the ingredients shall be in the process of actual mixing, shall be one (1) minute. The mixer paddles shall rotate at a rate of not less than seventy (70), nor more than eighty (80) revolutions per minute. An accurate timing de-

vice shall be provided for the proper timing of the mixing.” [R. 37.]

Type A specifications provide that this previously prepared mixture shall be transported to and spread upon the pavement as follows:

“The mixture, prepared as above specified, shall be brought to its place in the road in suitable conveyances covered with heavy canvas covers, and shall have a temperature when it reaches the work, of not less than 225°, nor more than 325° Fahrenheit. In dumping each load, at least 1-3 of said load shall be dumped outside of the space upon which it is to be spread. The material shall then at once be uniformly spread over the area designated by the inspector, by means of hot shovels and rakes; while the wearing surface is being shoveled into place and spread by raking, the shovelers and rakers shall keep off the spread material to avoid unevenness in compression.” [R. 37, 38.]

It is specifically required under Par. (f) of the Type A specifications, that after the spreading of the aforesaid mixture on the base of the pavement, the same shall be individually rolled prior to the spreading of the top or finishing course, as follows:

“After any binder course has been uniformly spread, as above specified, it shall be given an initial compression by means of a tandem roller, weighing not less than three (3) tons. The binder course shall then immediately be covered with the finishing course.” [R. 38.]

The body of Type A wearing surface is complete in itself following its individual rolling, but as a protective course against the attrition of traffic, Type A specifications provide for an independent surface layer of $\frac{1}{4}$ -inch thickness thereover. The fine mixture for the latter is maintained intact and does not function to fill voids in the lower mixture. The material for the finishing course is a mixture of sand, dust and asphalt. [Item 3, R. 35, 36.] The Type A specifications provide that the finishing course after thorough compression "*shall be at least one-quarter inch in thickness.*" [R. 35.] This fine surface layer is merely the customary mixture employed for a thin surface course by the paving industry long prior to any invention of Wallace, as we have heretofore shown in our reference to the prior art.

The Type A wearing surface does not adopt anything original with Wallace, and for the Type A specifications Mr. Jensen has employed merely the standard practices of the prior art. In the first place, it is apparent that the basis of the asserted Wallace invention is not adopted in the Type A specifications. In the Type A wearing surface, the voids in the body or binder course of the wearing surface are uniformly filled *throughout* the thickness of the course by selecting and proportioning the proper grades of mineral aggregate prior to spreading the mixture. The necessary fine material is uniformly distributed throughout the thickness of the binder course before spreading on the pavement. Wallace's invention of employing as an aggregate for the body of the wear-

12 TON STEAM ROLLER

UNCOMPRESSED
BINDER MIXTURE

COMPRESSED BINDER COURSE

UNCOMPRESSED
FINISHING COURSE
FINISHING COURSE
AFTER ROLLING



ing surface, the mere run of a crusher, without selecting or proportioning the grades, and thereafter filling the voids merely at the top by blending in the fine mixture in the laying of the pavement, is not adopted. In Type A, the fine material necessarily required to fill the voids in the binder course is combined with the coarse mixture before the course is spread or laid. In the Wallace pavement, the fine mixture is introduced as course C.

It has been stipulated in this case that on the Blackstone avenue job, which is the particular construction charged to be the infringement in this case, Type A specifications were followed and conformed to. [R. 198.] The actual laying of the Type A wearing surface on Blackstone avenue, and the results obtained, are shown by photographs* taken during the laying of the wearing surface, specimens in evidence of the wearing surface, and the testimony of Mr. Jensen and of Mr. Leyden. Mr. Leyden testifies:

“As illustrated in said ‘Exhibit D’ the mixture for the binder course was first spread on an asphaltic concrete foundation. After this mixture had been raked or leveled the same was rolled by means of the 12-ton steam roller appearing in said photograph. The mixture for the finishing course was thereupon spread upon the

*Exhibit D, appearing on the opposite page, is a photograph taken during the laying of Type A wearing surface on Blackstone avenue. The legend thereon will identify the uncompressed binder mixture; the twelve-ton steam roller employed for compressing the binder course; the compressed binder course; the uncompressed finishing course; and, finally, the completed wearing surface after rolling of the finishing course.

compressed binder course and the whole again rolled by the same steam roller. The completed pavement comprised a base, a binder course of approximately 1 1/4 inch in thickness and a top or finishing course of approximately 1/4 inch thickness. The materials of these two courses were not mixed or blended in the pavement as completed. The two courses were bonded together along a somewhat irregular line by the cementing properties of their bituminous contents but the composition of the two courses remained entirely distinct." [R. 144, 145,]

A specimen of the Blackstone avenue pavement was removed just after laying, and constitutes physical Exhibit E herein. Mr. Jensen states:

"This specimen is composed of the binder and finishing courses together with a portion of the base. The finishing course slightly exceeds the minimum of 1/4 inch prescribed by the specifications. This 1/4 inch layer is composed solely of the finishing course mixture. None of the stony pieces from the binder course protrude through to the riding surface. The composition of the binder course and the composition of the finishing course remain intact and are not mixed or blended. An inspection of the exhibit demonstrates that the finishing course is bonded to the binder precisely in the same manner in which the latter is bonded to the base. None of the courses are mixed or blended." [R. 180, 181.]

Four months after the laying of the Blackstone avenue pavement, a specimen was removed therefrom, and



is in evidence in this case as physical Exhibit F. Mr. Jensen testifies:

“An examination of this exhibit shows that the distinctiveness of the finishing course has been maintained in actual service. The finishing course slightly exceeds the minimum $\frac{1}{4}$ inch thickness and is free from the stony pieces of the binder mixture. This specimen illustrates the wearing qualities of Type A pavement. The seal coat is perfect and the uniform distribution of the finishing course has prevented any tendency to wave and provided a smooth riding surface.”
[R. 181.]

The photograph on the opposite page (Defendants' Exhibit G) is from a cross-section of a specimen also removed from the Blackstone avenue pavement shortly after the same was completed. Mr. Jensen testifies:

“It also illustrates that in Type A pavement there is no blending of the binder and finishing courses, and that the two courses are distinct.”
[R. 182.]

The testimony in this case is uncontradicted that the binder course of the Type A wearing surface on Blackstone avenue was rolled with a twelve-ton roller prior to the spreading of the mixture for the finishing course. A 12-ton roller was employed, although the specifications required merely a 3-ton roller. This roller was identically the same roller as was used to compress the mixture for the finishing course after the same had been spread. The reference in the brief of appellant to this compression as “single roll-

ing'' should not be understood to mean that the twelve-ton roller only passed once over each part of the binder course. The roller was started at the edge of the pavement and worked across the width of the pavement, lapping the wheels from 6 to 12 inches. [R. 352.] As the Blackstone avenue pavement was 20 feet wide, it is readily shown by simple computation that the roller passed over any part of the middle or ordinary portion of the pavement (except at the extreme edges) eight or ten times. This is admitted by plaintiff's witness Burdge [R. 373]. This also assumes that the roller was only worked back and forth along the pavement once across the width of the pavement, whereas it was admitted that at least in a portion of the work this rolling was duplicated. [R. 352, 353.] Burdge also admits that the twelve-ton roller employed in giving the individual compression to the binder course was of the heavy type ordinarily employed in pavement construction and was, in fact, a heavier roller than those customarily used in the prior art. [R. 373, 374.] Probably the judges of this court have at some time observed the rolling of an asphalt pavement, and if so, will readily appreciate how completely an asphalt mixture is compressed if a 12-ton roller be passed over it. Mr. Leyden states:

"In all cases this rolling of the binder course consolidates the same and causes the materials thereof to assume their final relative positions prior to the spreading of the finishing course."
[R. 146.]



Mr. Leyden was cross-examined in detail on this point, to the following effect:

“Q. Then from your observation you can say that the binder course in Type A has been compressed, to all practical purposes, the same amount before the finishing mixture is put on as it has after the finishing mixture is thoroughly rolled and completed?

“A. Well, as long as the pavement is hot it will have a movement. Now how much it will compress down after that I am not prepared to say, but it would be infinitesimal.” [R. 416.]

Mr. Jensen testifies that the rolling of the binder course consolidates the same prior to the spreading of the finishing mixture, and that:

“Prior to spreading the finishing course the constituents of the binder course have assumed their final relative positions. This is shown to be the fact by an examination of the specimen constituting Exhibit I hereto. The latter is a section of binder course removed from Route 8, near Clovis, Fresno county. This is Type A construction and follows the identical specifications and represents Type A binder course after compression and prior to the spreading of the finishing course.” [R. 183, 184.]

The photograph Defendants' Exhibit H [R. 196], reproduced on the opposite page, was taken during actual laying of Type A wearing surface upon Del Rey avenue, Route 18, Fresno county. [R. 182.] This photograph clearly shows how completely the binder course is compressed and consolidated prior

to spreading the finishing course in Type A construction. In the photograph, "A" is the uncompressed binder course mixture; "B" is the binder course after its individual rolling; "C" is the uncompressed finishing course mixture, and "D" is the finished pavement after rolling. The two tracks of the roller projecting forwardly in the picture show how completely the roller, passing only once over an area of uncompressed binder mixture, will compress and consolidate the same.

The dimensions given by appellant's witness Burdge for the thickness of the binder course after its initial compression, as compared with after the final compression of the completed pavement, confirms the testimony of Jensen and Leyden that the binder course received its ultimate compression prior to the spreading of the surface mixture. Burdge testifies that the binder course mixture was two inches thick prior to its individual compression, and after its individual compression it was approximately an inch and a quarter thick. [R. 367.] He further testifies that after the surface mixture had been spread and the pavement had received its final compression, that the binder course still remained an inch and a quarter thick. [R. 382.]

Plaintiff's witness Burdge, when asked as to the condition of the surface of the binder course after its compression and prior to the spreading of the mixture for the top course, replied: "It had superficial voids in it." [R. 355.] Plaintiff's witness Brough testified to the same, except that he also stated

that the marks of the wheels of the roller remained in the binder course. [R. 385.] Undoubtedly, upon the spreading of the finishing mixture, the finishing mixture will fill the superficial voids produced by the roughened upper surface of the binder course. This will give a somewhat uneven, irregular meeting-line between the surface course and the binder course in the completed pavement. But the same must be true of every wearing surface in which a top course is laid upon a coarse mixture. Much has been said by appellant in this case regarding the appearance to the eye of Type A and Type B wearing surfaces. To further aid the District Court to understand the results in Type A pavement, appellees submitted with the affidavit of Mr. Jensen, Exhibit I. This is a specimen of the binder course removed from Route A, near Clovis, Fresno county. Mr. Jensen states that this specimen represents the intermediate course in Type A construction after individual compression and prior to the spreading of the finishing course. [R. 183.] Mr. Leyden also correspondingly identifies this specimen. [R. 146.] The affidavits of Mr. Jensen and Mr. Leyden were submitted under the order of the District Court regarding expert testimony [R. 83, 84], and remained on file approximately five months prior to the trial of this case. During that time no notice was given that plaintiff contested these specimens, and defendants appeared at the trial relying upon the rule that any contest of such specimens must have been made under the order of the court regarding expert evidence. Appellant now urges

that the court should give no consideration to Exhibit I, because the men who actually removed the specimen were not produced in court. This contest was made possible because the court did not hold plaintiff to the order entered regarding expert evidence. Appellees excepted to the failure of the court to enforce Equity Rule 48. [R. 318, 323.] Before such testimony can be given any weight here, this court should review its admissibility and, we submit, exclude it under *Equity Rule 48*. Otherwise, there is an unwarranted disregard of that rule by appellant. In addition to excepting to the failure to enforce Equity Rule 48, appellees offered at the trial to produce the party removing the specimen constituting Exhibit I, but this was denied by the court. [R. 417, 418.] The importance of Exhibit I is not great, because it was offered merely for the convenience of the court, and appellant has not shown that the binder course of Type A pavement received less than ultimate compression prior to the spreading of the surface mixture. Furthermore, Mr. Jensen and Mr. Leyden both testified at the trial that Exhibit I was a fair and typical representation of the Type A binder course after receiving its individual compression and prior to spreading the finishing mixture. [R. 415, 416; 425.] Mr. Jensen testifies as follows:

“Q. What have you to say regarding whether or not Exhibit I is a fair example of the binder course as it appeared on Blackstone avenue after rolling and prior to the spreading of the finishing course (handing exhibit to witness)?

“A. I would say that that is a fair example of the appearance of the binder course on Blackstone avenue.” [R. 425.]

One of appellant's witnesses in connection with this exhibit referred to statements made by a man named Anderson concerning a particular spot on Clovis avenue; but it was not shown at all that the spot referred to by Anderson was the one from which Exhibit I was removed. Furthermore, Mr. Leyden testified that no Mr. Anderson had anything to do with the specimens [R. 417], and we submit that this court will not determine any question in the case on gossip.

In a further endeavor to visualize to the court the meeting-line between the finishing course and the intermediate course in Type A pavement, defendants produced at the trial a chalk specimen, Exhibit N. It has been found that chalk has no affinity for asphalt. It was conceived that if chalk is spread on the intermediate course prior to spreading the finishing course, that the chalk would maintain a color-line so that the eye could trace the meeting-line between the two courses. Appellant urges that this specimen should be disregarded because Mr. Leyden did not remain in attendance during the actual conduct of the experiment, but gave directions to his subordinates to conduct the same. There is no evidence that the regular Type A construction was not followed in this case. Mr. Leyden testified that he gave directions that this specimen was to be taken from the Clovis avenue pavement in the regular course of construction of

Type A. [R. 413.] Appellant attacks this specimen on the ground that the talcum powder might have cooled off the binder course. The specimen shows that only a very thin skim of chalk was used, and we deem it quibbling to claim that it could have chilled the binder course mixture to any appreciable degree. As said by the court at the trial of this case, this chalk specimen is helpful, for: "It shows the line of cleavage between the binder course and the finishing course." [R. 414.]

Appellant relies upon the fact that it is difficult, in any of these pavements after they are laid and rolled, to distinguish with the eye one course from another. This is primarily due to the fact that the material in each of the courses is of the same color. Furthermore, the same asphalt is used in each of the courses, and a certain amount of identically the same grade of fine aggregate is employed. This renders it difficult, from a mere observance of the eye, to tell where one course begins and another stops. Particularly is this the case with photographs. This is fully demonstrated by Defendants' Physical Exhibit E. This is a specimen of Type A pavement including the base and the wearing surface. It is not denied that the base was laid and rolled and left from one day to a week before the wearing surface was applied thereto. Under any theory advanced by appellant in this case, the binder course of the wearing surface cannot be "blended" into the base. *Yet it is just as difficult to determine the meeting-line between the binder course and the base, as it is to determine the meeting-line*

between the finishing course and the binder course in Exhibit E. The “blending” referred to by the Wallace patent is not the mere filling of the superficial voids produced at the roughened surface of a coarse mixture, for such superficial voids always appeared and were always filled in the prior art pavements, as we will hereinafter point out.

The proofs in the record clearly establish that Type A wearing surface is not a single layer structure, but is multi-layer in character. The body or binder course comprising the first layer of the Type A wearing surface is formed by the preparation of a uniform and homogeneous mixture properly graded to reduce the voids. A sufficient quantity of fine mixture is introduced into this binder course before it is spread to fill the voids uniformly throughout. The top or second layer of the wearing surface is formed of a mixture of fine mineral matter (sand) and asphalt, and is superposed upon the binder course as a seal-coat and to withstand attrition. It is not the function of the materials of this top course to be blended and merged into the binder course to fill the voids at the top thereof. To the contrary, the top course is to remain distinct from the binder course and, as prescribed by the specifications, after the completion of the pavement “shall be at least one-quarter inch in thickness.” [R. 35.] The Type A wearing surface is, therefore, of the multi-layer character which is expressly disclaimed in the Wallace patent, in the specification, as follows:

“* * * the completed pavement is not a multi-layer pavement, but on the other hand the two courses are practically pressed, by the single compression referred to, into a single mass.”

(Wallace Patent, p. 1, lines 83-87.)

The Type A Wearing Surface Does Not Infringe the Wallace Patent in Suit.

It cannot be soundly maintained that Wallace made any primary or generic invention. It is elementary that in construing a patent the court will be guided by the actual extent of the invention made by the patentee. A patent for a narrow detail improvement will be given a narrow and restricted construction. Wallace was not the first to invent a composite pavement having a base and a wearing surface, the latter consisting of a body or binder course with a thin finishing course superposed thereon. This combination of courses was old and well known in the art prior to Wallace. Wallace did not invent any of the mixtures employed by appellees in their Type A pavement. We have seen that to obtain a grant of his patent in the Patent Office, Wallace disclaimed any intention to cover a pavement in which the body or binder course of the wearing surface was individually rolled, or in which the mineral aggregate was graded and the mixture completed prior to spreading and laying on the base. In fact, Wallace's sole novel thought resided in employing the run of a crusher and blending thereinto the necessary fine mixture in the laying of the

pavement. This was a limited and specific improvement. The law is well settled that the court, in interpreting the Wallace patent, will limit the scope thereof to the aforesaid actual and only contribution to the art made by Wallace. Where the patent is merely an improvement patent and not a pioneer, the court will not construe the patent to cover anything except the specific improvement made.

Gordon v. Warder, 150 U. S. 47, 37 L. Ed. 992;

Boyd v. Janesville, 150 U. S. 260, 39 L. Ed. 973;

Clark v. Williamantic, 140 U. S. 481, 351 L. Ed. 521;

Hopkins on Patents, p. 187.

In preparing the specifications for the Type A wearing surface, Mr. Jensen intentionally and advisedly refused to adopt the sole improvement or suggestion invented by Wallace. Mr. Jensen has given his reasons for not adopting the Wallace invention, and the success had with Type A pavement fully justifies Mr. Jensen's judgment. Instead of adopting the Wallace idea of using a crusher-run in the intermediate mixture and blending the necessary fine mixture, in situ, Jensen went back to the expired Warren patent and employed the Warren graded mixture. Following the Warren patent, and instead of adopting the Wallace idea of avoiding any compression of the coarse mixture prior to spreading thereover the fine mixture, Mr. Jensen adopted the prior art practice of individually rolling the binder course mixture. We cannot per-

ceive, from a careful study of the case, where the specifications for the Type A wearing surface, or the construction embodied therein, adopt anything at all which was invented by Wallace. We believe that the Type A pavement is founded on the established practices and principles had in the paving industry prior to any asserted invention of Wallace. It follows that there is nothing in the law which would warrant construing the Wallace patent to monopolize Type A wearing surface.

An issue of infringement in a patent case is ordinarily determined by comparing the claim alleged to be infringed, with the alleged infringing thing. Usually this comparison may be most readily made by first resolving the claim into its elements. Appellant in its brief before this court concedes that the first claim of the Wallace patent is limited to "the requirement that the upper course shall be laid without previous compression of the lower course," and only urges that claim 2 is "here in issue." (Appellant's Brief, p. 71.) The elements of claim 2 are as follows:

1. A foundation;
2. A lower course thereon made up of large pieces of stone, smaller pieces of stone and stone dust, mixed with sufficient bitumen of proper consistency to thoroughly coat all of the particles, and
3. An upper thin course disposed on the lower course and made up of finely-divided mineral matter mixed with sufficient bituminous binding material to thoroughly coat all of the particles, and

4. Blended with the coarse mixture at the top of the mass;

5. Whereby the two layers are bonded into one and a compact rigid layer densest at the top is formed.

Defendants' Type A wearing surface does not coincide with the following limitations of claim 2 of the patent in suit, to wit:

(a) The lower or binder course of Type A is not "made up of large pieces of stone, smaller pieces of stone and stone dust," but is made up of a properly graded and proportioned Warren mixture of crushed stone, gravel, sand and dust.

(b) The top course is not "blended with the coarse mixture at the top of the mass," but, as prescribed in the Type A specifications, in the completed pavement remains "at least one-quarter inch in thickness."

(c) In lieu of "a compact rigid layer," Type A wearing surface is multi-layer, in that it consists of a binder course with a top finishing course superposed thereon.

(d) Type A wearing surface is not "densest at the top," for the binder course is of uniform density throughout and of greater density than the top 1/4-inch finishing course.

(a) Claim 2 specifies that the lower course (mixture B) is "made up of large pieces of stone, smaller pieces of stone and stone dust." Under the guise of referring to this mixture as a "coarse-to-fine" mixture, appellant's brief endeavors to interpolate into this mixture something that it does not contain. Appel-

lant states that it “consists of a mixture of different sizes of stone, varying from coarse pieces to fine *sand* and dust” (Appellant’s Brief, p. 2). This is extremely misleading. Claim 2 definitely specifies large pieces of stone, smaller pieces of stone and stone dust, and *does not specify (and thereby excludes) sand*. The phrase “made up of,” like the term “consists of,” serves to indicate what is not, as well as what is, present in the mixture. (*Hoskins Mfg. Co. v. General Elec. Co.*, 212 Fed. 422, at 428.) Construed in the light of the specification,—as the court should construe any patent (*Walker on Patents*, Sec. 182),—this obviously refers to “a crusher run.” Sand must be added to fill the voids in such mixture (Richardson, pp. 23-25, Exhibit M-11). The Wallace patent shows throughout, that the mixture B is to be spread before any sand is introduced, and that the introduction of the sand is to be accomplished by the spreading and blending of the fine mixture C. The drawing of the Wallace patent shows the mixture B replete with voids unfilled by any fine material. The Wallace specification states that the mixture B is to be spread.

“* * * in the state that the whole run is discharged from a crusher.” (Wallace Patent, p. 1, lines 53, 54.)

A rock-crusher will produce large and small pieces of stone and stone-dust, but a “crusher run” will contain no sand. In his application as originally filed, Wallace requested as claim 3, a claim in which the mixture B was merely stated to be composed of

“* * * stone commingled with binding material,” without particularizing upon the sizes or character of the stone [R. 437]. This was rejected by the Patent Office, and cancelled [R. 446, 447]. Wallace substituted a new claim (claim 2 of the patent) and defined therein the specific character of the mineral constituent of the mixture B. To obtain this claim, and differentiate from the prior patents to Hassam and McDonald, Wallace argued to the Patent Office that claim 2 recited the specific ingredients of the mixture B, and that neither Hassam nor McDonald had such specific mixture [R. 454]. This was again urged to the Patent Office in an amendment filed by Wallace on December 21, 1909, wherein he said:

“It is confidently thought that from the foregoing the examiner will reach the conclusion *that the materials* of the two courses are essential to the practice of the process and the attainment of the result sought * * *.” [R. 458.]

The fact that the mixture B of the Wallace patent is merely the product of a rock-crusher and does not contain any sand, is a distinguishing characteristic of the Wallace invention which appellant attempts to becloud. The function of the sand in such a mixture is to fill the voids around the stone pieces and provide them with proper lateral support [R. 106]. As the broken stone product of a rock-crusher is distributed on the base of the pavement, the particles will be neither in close contact nor in fixed position relative to each other until the necessary sand is introduced into the mixture and pressure applied [R. 105]. The

theory of the Wallace invention is to employ an initial compression which will first force the necessary sand between the rock pieces and then press the rock pieces and sand into close contact to consolidate the mass. As stated in the testimony of the inventor Wallace:

“By the preferred method of construction pointed out by the patent in suit the large mineral units of the lower layer are neither in close contact nor in fixed position relative to each other when the fine mixture is spread over the top, but are disposed loosely on the foundation. The pressure which brings the large units into close contact and bonds them together acts first on the fine mixture and tends to force it into the interstices of the upper portion of the layer of coarse mixture and at the same time it consolidates said layer by causing a change in the relative position of the particles of which it is composed.” [R. 105.]

The fact that Wallace understood and intended the patent in suit to be limited to a coarse mixture made up merely of large pieces of stone, smaller pieces of stone and stone-dust, and spread prior to the introduction of the necessary proportion of sand, is further shown by the fact that ten days before the issuance of the patent in suit Wallace applied for another patent, No. 1,183,507 [R. 499j]. In this later patent, Wallace states:

“The object of my present application is to regulate the percentage of voids in the mineral matter used for the lower course of wearing surface, and also to permit the use of stone other

than crusher run, as in many cases this may prove advantageous in reducing the cost of construction." (Patent 1,183,507, p. 1, lines 13-19.)

From this it appears that, after the Patent Office had determined upon what claims might be allowed in and before the grant of the patent in suit, Wallace appreciated and agreed that such claims were limited to using for the mixture B the mere run of a crusher to which no sand had been added. He foresaw that his patent would not be infringed if sand was combined with the mixture before it was spread in lieu of blending it by means of the mixture C. In his later patent he, therefore, proposed introducing
“* * * sufficient sand or earthy material to reduce the voids to 22%—28% of the mass,” before spreading the mixture B (Wallace Patent 1,183,507,—p. 2, lines 43-44). Patent 1,183,507 contains this significant statement:

“I wish to call attention to the fact that no effort is made to fill the voids to repletion throughout the mass but to so regulate the voids in lower portions thereof that the resultant wearing surface while possessing sufficient rigidity in its lower portion to withstand traffic is less dense in the lower than in the upper portion of the mass.” (P. 1, lines 98-105.)

The Warren patent 727,505 proposed proportioning and combining, prior to spreading, a proper amount of sand to fill the voids to the greatest possible repletion, and stated that before the invention of Warren it had not been possible to fill the voids to less than

21 per cent (Warren Patent 727,505, p. 1, lines 44, 45). In applying for his second patent, Wallace perceived that he must distinguish from the Warren patent 727,505, and, therefore, began where Warren left off, to wit: at 22 per cent. In other words, he did not propose in his later patent introducing sufficient sand into the mixture B before it was spread to fill the voids to repletion, but did propose mixing enough to come as near as patentably possible to the Warren patent, to wit: 22 per cent. This would partially fill the voids throughout the mass, but not to repletion, as stated by Wallace. The blending of further sand by means of the mixture C would fill the voids to repletion at the top of the mass and produce a layer less dense in the lower than in the upper portion of the mass, as specified by Wallace (Wallace Patent 1,183,507, p. 1, line 105). This all clearly and distinctly shows that Wallace understood, appreciated and agreed that Warren Patent 727,505 covered a mixture in which the necessary sand to fill the voids to less than 21 per cent was combined prior to spreading; that Wallace Patent 1,183,507 covered a mixture B in which sufficient sand was combined prior to the spreading to reduce the voids down to 22 per cent., and that the patent in suit only covered a mixture B with which no sand had been combined prior to spreading. The metes and bounds of these three patents are contiguous, but do not overlap. The effort of appellant in this case is to becloud the clear delineation of these metes and bounds to the end that Type A wearing surface will be placed in the territory of the patent in

suit, whereas it belongs in the territory of Warren patent 727,505, and is separated from the patent in suit by the territory of the later Wallace patent 1,183,507. The binder course mixture of Type A wearing surface does not correspond to the Wallace patent in suit, because it is made up of crushed stone, gravel, sand and dust, instead of "large pieces of stone, smaller pieces of stone and stone dust." All of the fine material (sand) necessary to reduce the voids to less than 21 per cent is combined in the binder course mixture of Type A prior to the spreading of the mixture in the manner of Warren patent 727,505. None of the sand is so combined in the Wallace patent in suit.

(b) Claim 2 of the Wallace patent specifies that the fine mixture C is "blended with the coarse mixture at the top of the mass." Appellant and appellees are not in accord as to the meaning and proper interpretation of this phrase of the claim. Appellees contend that it refers to Wallace's conception of introducing the necessary fine material or sand into the mixture B by spreading and blending the mixture C and initially compressing the mass to produce a single layer. This is consistent with the fact that Wallace was endeavoring to fill the voids at the top of a crusher-run mixture without the necessity of employing enough sand or fine material to fill the voids throughout the mass. Therefore, in defining his pavement in claim 2 of the patent in suit, Wallace stated that the fine mixture should be blended with the coarse mixture "at the top of the mass." Type A wearing surface does not embody

this thought in any manner. In Type A wearing surface, the fine material for the binder course mixture is combined therewith prior to the spreading of the mixture on the base. The fine material of the course C is not for the purpose of combining with the binder course mixture to fill the voids therein, but is to provide a separate layer superposed thereon. In Type A, sufficient fine material is graded into the binder course mixture, independent of the mixture C, to fill the voids uniformly throughout and to less than 21 per cent. There is no blending in Type A pavement which corresponds to the blending referred to in claim 2 of the patent in suit. It was so held by the District Court herein:

“I am persuaded from a consideration of all of the facts involved, including an inspection of the pavement produced by the defendants, that the two courses of the pavement produced by them were and are not blended within the meaning of that term as used in plaintiff’s patent. In my judgment, therefore, there is no infringement of plaintiff’s patent shown by the product of defendants.” [R. 503.]

To meet the exigencies of this case, appellant attempts to escape the meaning for claim 2 above attached, and urges that all that is meant by the requirement in the claim “blended with the coarse mixture at the top of the mass” is that there shall be “no sharp or clear dividing line between the two courses.” Appellant refers to the sentence in the patent in suit (p. 2, lines 32-36): “While, of course,

C (the fine mixture) is added in one principal coat or layer more may be added from time to time during the progress of the laying if required in order to cause the surface to seal or close up in spots requiring more fine mixture," as showing that Wallace intends to have a layer of fine material only superposed above all of the coarse aggregate (Appellant's Brief, p. 59). This sentence does not support appellant's contention. The sentence plainly means that if in spreading the mixture C a sufficient quantity has not been used to fill the voids at the top of the mass, that then more fine material may be added. We will show at a later point herein that, if construed as urged by appellant, the patent is void, because there was no sharp or clear dividing line between the two courses in the prior pavements of this type. At this point, we wish to emphasize that the terms of the patent in suit clearly belie such an interpretation. If the phrase of the claim read: "blended with the coarse mixture so that no sharp or clear dividing line between the two courses existed," appellant's interpretation thereof might be arguable. But the claim reads, blended "at the top of the mass." Obviously, if there be two courses, the product is not blended at the top of the mass, even though there be no sharp or clear dividing line between the two courses. Appellant would in effect place a construction upon claim 2 just the opposite of the terms of the claim. This is another attempt to man-handle a patent claim and treat it as "a nose of wax which may be turned and twisted in any direction," a practice authoritatively criticized in *White v. Dunbar*, 119 U. S. 47. Appel-

lees' position is further supported by the fact that the Wallace patent calls for a wearing surface which is not multi-layer, and in that respect also Type A wearing surface does not correspond to claim 2 of the patent in suit.

(c) Claim 2 of the Wallace patent specifies that "the two layers are bonded into one and a compact rigid layer * * * is formed." It is obvious from the Wallace patent that Wallace was not seeking a multi-layer wearing surface. In spreading two mixtures, B and C, upon the base, Wallace was not seeking to gain two layers in the finished pavement, but was merely adopting that method as the most expedient one by which to intermingle the fine mixture C and coarse mixture B to form a single mixture. Wallace is explicit in his patent that he is to patent a *single layer*. In his specification, Wallace states:

"Attention is here invited to the fact that while I describe the pavement made in accordance with my invention as having two courses B and C, the completed pavement is not a multi-layer pavement, but on the other hand the two courses are practically pressed, by the single compression referred to, into a single mass." (Wallace Patent, p. 1, lines 80-87.)

The brief for appellant states that the wearing surface of the Wallace patent "will of course not be homogeneous throughout" (Appellant's Brief, p. 4), undoubtedly with the intent to portray the wearing surface of the patent in suit as of the same multi-

layer character as Type A. The Wallace patent in suit states:

“ * * * the materials of the two courses being united at the top of the pavement in one integral or *homogeneous* mass * * *.” [P. 2, lines 28-30.]

Whatever misapprehension appellant may now be laboring under upon this subject, it is clear that Wallace meant just what he said. In his argument filed in the Patent Office on June 28, 1909, Wallace stated:

“In the last line of page 5 and lines 1-3, page 6 of the original specification it is stated that ‘the materials of the two courses being united at the top of the pavement in one integral or *homogeneous* mass that presents a smooth surface and one possessed of durable capacity.’ This uniting of the two courses in one *homogeneous* mass at the top of the pavement is the result of the three steps set forth in claim 1, viz.: the placing without compression of the mixture of stone and bitumen, the subsequent placing on the first mixture of the mixture of finely-divided mineral matter and bituminous binding material, and the initial compression of the superposed courses.” [R. 457.]

Wallace fully understood the distinction between a single homogeneous layer and a multi-layer construction. In the argument filed in the Patent Office on February 7, 1910, he said:

“When therefore in constructing pavements such as described the compacting of the lower layer of wearing surface before the application of

the upper layer would virtually destroy its usefulness. As owing to the cementitious properties of the bitumen, the mass of lower layer is coherent or agglutinated and in this condition could not be forced into interstices or voids for the lower layer having already been subjected to pressure it is capable of withstanding a greater load or pressure without displacement of the particles than the material which is desired to be forced to penetrate or permeate the mass. So that following the line of least resistance this material not forced into the voids of the lower layer but is merely spread or plastered over the surface and does not blend with the lower layer. This blending is an essential feature—strengthening the wearing surface by blending fine layer with the coarse layer—thus producing *one* layer with no line of demarkation.” [R. 465, 466.]

The evidence in this case definitely establishes, and appellant does not deny, that the Type A wearing surface is a multi-layer surface. The complaint of appellant is that “there is no sharp or clear dividing line between the two courses” (Appellant’s Brief, p. 36). In Type A wearing surface there is a binder course and there is a distinct finishing course, and the mixtures for these two courses are completed, spread and compacted independently of each other. The specifications for Type A wearing surface require that the finishing course, after the pavement is completed, must be “at least one-quarter inch in thickness” [R. 35]. The statement in claim 2 that in the Wallace pavement “the two courses are bonded into one and a compact rigid layer is formed,” is a fundamental distinction

differentiating the Wallace construction from the Type A wearing surface. The distinction between the two may be visualized as follows: Assume that, instead of layers of mineral aggregate and bitumen, the courses are bodies of color. Assume that the binder course is red, and the finishing course blue. The theory of the Wallace patent is that the blue and the red are separately spread upon the pavement but do not maintain their identity. The blue is forced down into the red until there is only one homogeneous mass. Clearly, there would remain no blue layer, all of the material of the blue layer having been merged with the red to produce a purple. In Type A wearing surface, on the other hand, if the binder course is red and the finishing course is blue, there remains both blue and red stripes, irrespective of whether there is or is not a sharp or clear dividing line between the two colors. It could not then be said that the blue and red were "blended into one layer" (color) so that only a single layer (color) was formed. It would have to still be said that there was a blue layer and a red layer. This is the same distinction which exists between Type A wearing surface and the Wallace construction as prescribed by claim 2 of the patent in suit. It must be admitted that, under defendants' specifications, a 1/4-inch finishing course is maintained as the top layer of the wearing surface, and that appellees, therefore, do not employ a single homogeneous layer.

(d) Finally, claim 2 of the Wallace patent in suit requires that the single layer wearing surface shall

be “densest at the top.” We have not the slightest doubt that this is intended to refer to the filing of the voids at the top of the coarse mixture B by blending thereinto the fine mixture C. The term “densest at the top” was undoubtedly intended by Wallace, and was understood by the Patent Office, to refer to a wearing surface as illustrated in the drawing of the Wallace patent, wherein the voids in the mixture B are shown as filled by the fine mixture at the top of the mass and as unfilled at the lower portion. By spreading the fine mixture C on and blending the same into the coarse mixture B, the voids at the top of the mixture B could be filled without any necessity of utilizing enough fine material to fill the voids throughout the mixture B. This eliminated the necessity of the prior Warren patent 727,505, of using enough sand to fill the voids throughout the mass before it was spread on the pavement base. This thought is expressed by Wallace in other language of his patent, as follows:

“* * * inasmuch as the fine mixture in the thin or surface course C is used at the surface only instead of being distributed throughout the whole mass a comparatively small quantity of the fine mixture is required; * * *.” (Wallace Patent, p. 2, lines 17-23.)

Furthermore, Wallace thereby proposed to eliminate the necessity of proportioning the quantity of fine material, as appears from the specification of the Wallace patent, in which Wallace says that he can thereby “* * * provide a dense surface layer or course without in any way proportioning the amount of fine material used in connection with the coarser stone.”

(Wallace Patent, p. 1, lines 76-79.) Under the authority of the decision of this court in *Lorraine v. Townsend*, *supra*, we are entitled to interpret the Wallace patent in the light of the meaning attached to it before the Patent Office. In the argument filed by Wallace in the Patent Office on February 5, 1910, he states: "Applicant further wishes to emphasize the fact that while McDonald attempts to fill the voids to repletion throughout the mass he (applicant) does not attempt to fill the voids except in the upper portion of the mass—i. e., the part of the surface subjected to the abrasive action of traffic, * * *." [R. 463.] The phrase "the part of the surface subjected to the abrasive action of the traffic" shows that extreme upper surface is what is meant by Wallace "as the top of the mass." On September 16, 1909, Wallace stated to the Patent Office that he "* * * assures a dense surface course without in any way proportioning the amount of fine material used in connection with the coarser stone" [R. 443]. This conclusively establishes that the phrase "densest at the top" was not intended to refer merely to an impermeable layer of fine material. The "proportioning" of materials is to fill the voids.

In accordance with the theory of the Wallace invention, the claims proceed to describe that upon the coarse mixture B there is spread the fine mixture C, which is stated in claim 1 to be "blended and bonded with the lower course by compression, whereby the two courses are made a compact and substantially integral mass which is densest at its top."; and in claim

2: “* * * blended with the coarse mixture at the top of the mass, whereby the two layers are bonded into one and a compact rigid layer densest at the top is formed.” The description embodied in the Wallace specification, the drawing of the Wallace patent, the meaning attached thereto before the Patent Office, and the claims of the Wallace patent,—all consistently show that the construction sought to be covered by the patent is a wearing course in which the voids are filled only at the extreme upper portion of the mass, in this way escaping the necessity of employing enough material to fill the voids throughout the mass, and escaping the necessity of proportioning and precombining the materials.

In Type A pavement the wearing surface is not “densest at the top.” The reason for this is that for the binder course mixture Type A pavement employs the old Warren mixture (which years of use and litigation have established contains the least possible percentage of voids) and a top course of fine material containing a greater percentage of voids. The testimony of Mr. Jensen is as follows:

“In Type A the pavement is not densest at the top. As heretofore demonstrated Type A has a finishing course of 1/4-inch minimum thickness free from any of the stony pieces of the binder course. This finishing course is composed of sand and bitumen. The aggregate of the finishing course is necessarily in fact of less density than the graded mineral aggregate of the binder course. The binder course as aforesaid is that of Patent No. 727,505 and pursuant to that pat-

ent contains less than 21% voids. The aggregate of the finishing course, being composed of a sand, necessarily contains a much higher percentage of voids. This is due to the elementary principle of physics that a solid is more dense than it will be when broken and that the more it is broken the less dense it is bound to be. The 1/4-inch top layer of Type A is therefore of less density than the binder course. In verification of this statement I have had an analysis made of a specimen of Type A taken from the aforesaid Blackstone avenue job on March 11, 1921. This specimen was presented by me to Smith-Emery Company, Testing Engineers, of Los Angeles, California, for analysis. Their analysis presented to me on June 23, 1921, states that the weight per cubic foot of the 1/4-inch top coat of said Type A specimen is 133.6 lbs., and the weight per cubic foot of the 1-1/4-inch binder course is 154.8 lbs." [R. 184.]

This is corroborated by the uncontradicted testimony of Elmer O. Slater, manager of the Los Angeles laboratory of Smith-Emery Company, to the effect that he has tested the wearing surface of Type A pavement, and finds that the weight of the binder course per cubic foot is 154.8 pounds, and the weight of the finishing course per cubic foot is 133.6 pounds, and that he does therefore certify "that the top one-quarter-inch finishing course of said Blackstone Avenue pavement is in fact of less density than the binder course upon which it rests." [R. 142.] Mr. Perkins, of appellant's company, corroborates the testimony of Mr. Jensen and Mr. Slater, that in Type A

pavement the top course contains a greater proportion of voids than the binder course, in that Mr. Perkins points out that the top finishing course of Type A contains approximately 30 per cent of voids [R. 33], and that the employment of the graded Warren aggregate will produce a course having less than 21 per cent of voids [R. 120].

The only answer of appellant to the fact that claim 2 is limited to a wearing surface "densest at the top," and that the top 1/4-inch course of Type A pavement is of less density than the binder course upon which it rests, is that by "densest at the top" the Wallace patent should not be construed as referring to a wearing surface in which the voids are filled to the greatest extent at the upper portion, but as referring to "impermeability to water." Appellant says: "* * * the Wallace patent states over and over again, in terms which are absolutely unmistakable, that the purpose and reason for making the pavement 'dense' at the top is to render it impermeable to the elements." (Appellant's Brief, pp. 49, 50.) There is no such statement in the Wallace patent, and the quotations therefrom appearing at p. 50 of Appellant's Brief in no manner support the statement.

While the Wallace patent refers to the desirability of having a wearing surface which is rendered impermeable to the elements, Wallace was merely there stating one aspect of his pavement, which was distinct and apart from its density. In no place in the Wallace patent is there anything to show that Wallace has used the word "dense" as synonymous with the word

“impermeable,” which use of the word “dense” would be contrary to the meaning ordinarily attached to it in the paving industry and would most certainly have been explicitly stated if there had been such intention. Appellant quotes from the Wallace patent, p. 1, line 91, in which it is stated that the Wallace construction is advantageous inasmuch as it provides a pavement “the upper portion or surface of which is dense *and* impermeable and is adapted to close or seal to advantage * * *.” If Wallace were using the words “dense” and “impermeable” as synonymous, he either would have omitted one of the terms, or else would have separated them by “or” instead of “and.” If Wallace had intended to refer to the top of the pavement as moisture-proof, he would not have used the term “densest.” In using the term “densest,” he was advisedly employing a comparative term which would distinguish between the character of the wearing surface at its upper portion as compared with its lower portion. There would be no occasion for using a comparative term with reference to the water-proof character of the top of a pavement, for it would be immaterial whether or not the lower portion was water-proof. In the 2nd Par. of the specification of his patent, Wallace recognized that prior art pavements had been impermeable, but he said that they had also been “mushy.” Wallace proposed to provide a pavement which was not only impermeable, but was not mushy, i. e., a pavement which was both impermeable and dense.

The further language of claim 2 of the Wallace patent precludes the construction attempted to be placed by appellant upon the phrase “densest at the top.” Claim 2 specifies that not only shall the pavement be densest at the top, but that it shall be “blended with the coarse mixture at the top of the mass.” If “densest at the top” be construed to refer merely to a layer of finely-divided material, it would not meet the other provision of claim 2 requiring that the finely-divided material be “blended at the top of the mass.” Obviously, Wallace contemplated forcing the fine material into the voids of the coarse mixture so that the pavement would be both blended at the top and densest at the top. *Defendants’ pavement is neither blended at the top nor densest at the top.*

In employing the term “densest” as a comparative term to define that the voids in the upper portion of the Wallace wearing surface were more nearly filled to repletion than in the lower portion, Wallace was employing said term with the meaning attached to it by the paving industry at the time of its use by Wallace, and with the meaning that had long been attached to it by Warren Brothers, with whom Wallace was associated. Mr. Richardson’s book on “Modern Asphalt Pavement” (Defendants’ Exhibit M-11) contains a chapter on how to determine the denseness of a pavement structure, and it will be found on an examination thereof that the method employed is to determine the total number of voids therein, i. e., the ratio of filled and unfilled spaces within the structure. For example, at p. 356 Mr. Richardson states:

* * * The density of such a mixture, calculated from its constituents, is 2.27 to 2.29, so that in this mixture but a small quantity of voids is found." The recognized meaning of the term "dense" in the paving industry, is shown by Warren Patent 727,505. We find that Warren in his patent uses the term "dense" synonymously with the phrase "as free from voids as possible." For example, Warren states that the object of his invention is to make a pavement "* * * as dense, as free from voids as possible * * * (Warren Patent 727,505, p. 1, lines 22, 23.) The court will perceive from a reading of the Warren Patent that it was then recognized in the paving industry that a pavement having the least total percentage of voids was the densest or solidest or most compact. Warren in his patent again uses the term "dense" as synonymous with: "dense, solid; homogeneous, compact body with the smallest percentage of voids * * *." (Warren Patent, p. 1, lines 54-56.) The testimony of Wallace in this case shows that for ten years prior to applying for the patent in suit, he was in the employ of appellant, laying pavement under this Warren patent, and was thoroughly familiar with the Warren patent. Appellant states in its brief: "The Wallace invention grew out of Wallace's experience with the Warren pavement of Warren Patent No. 727,505" (p. 13).

Appellant in its brief says: "The trouble with the defendant's position is that it does not go to the Wallace patent to find the meaning of Wallace, but instead it goes to the Warren Patent 727,505." We believe

we are fully justified in considering the Warren patent, in view of the fact that it was owned by appellant and was being operated under for appellant by Wallace at the time Wallace made his invention, which was admittedly a result of Wallace's experience with this Warren patent. Strangely, appellant does not refer to the later Wallace Patent 1,183,507, applied for ten days prior to the issuance of the patent in suit, or to the meaning therein attached to the term "dense." As we have shown above, the later Wallace patent differs from the patent in suit merely in that sufficient fine material is pre-combined with the coarse mixture to reduce the voids to between 22 and 28 per cent. In this patent Wallace states:

"I wish to call attention to the fact that no effort is made to fill the voids to repletion throughout the mass but to so regulate the voids in lower portions thereof that the resultant wearing surface while possessing sufficient rigidity in its lower portion to withstand traffic is less *dense* in the lower than in the upper portion of the mass."
[R. 499j,—p. 1, lines 98-105.]

It cannot be denied that in his later patent Wallace used the term "dense" with reference to filling the voids in the structure. The application for the later patent having been filed during the pendency of the patent in suit, we believe it most illogical to contend that Wallace used the term "dense" in the two patents with diametrically opposite meanings.

As stated above, the purpose of filling the voids in the mixture B is to provide proper lateral support for

the stone pieces; in other words, to provide a stable or dense structure. This is explained by appellant's expert, Mr. Perkins, as follows:

"That is the coarse, medium and fine sized particles were indiscriminately and uniformly distributed throughout the depth of the layer in order to produce uniform density and uniform stability at all points throughout the mass of the wearing surface." [R. 121.]

Mr. Perkins has thus used the word "density" with reference to filling the voids. Mr. George Warren accepts this meaning of the term "dense" in his testimony herein. When explaining the construction of the pavement laid by plaintiff in New Bedford, in 1909, under the Warren method of selecting and proportioning the aggregate to fill the voids, Mr. Warren testified: "* * * It was termed a *dense asphaltic* mixture of varying sizes of crushed stone." [R. 400.] Referring to the same pavement, Mr. Warren again stated: "I said, as I recollect it, that it was made of varying sizes of aggregate crushed stone and sand and asphalt cement, made as dense as it could be made—as solid." [R. 402, 403.]

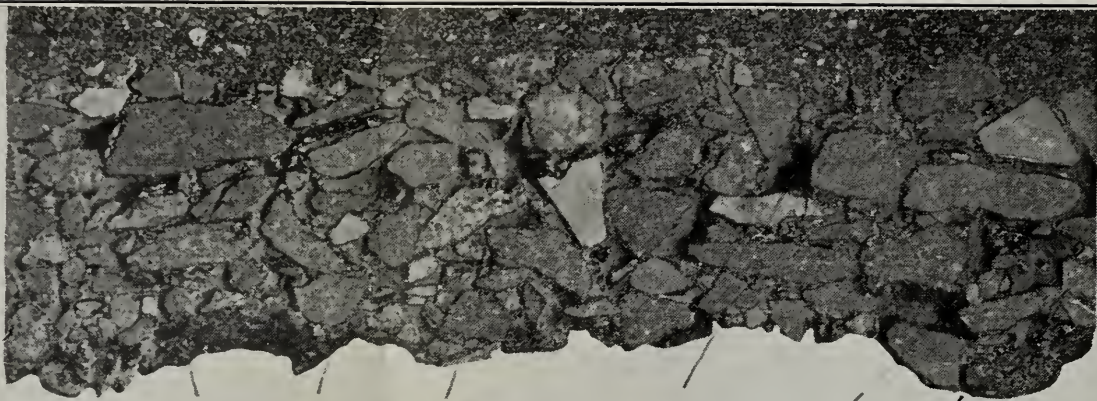
The first time in this litigation,—and apparently for the first time in the history of the paving industry,—that any other meaning was given to the term "dense" or "densest," was when plaintiff's expert Perkins took the witness-stand in this case. When appellant filed its original expert affidavits in this case (which was before the contentions of appellees had been made known), appellant's expert Perkins accorded to the

term “dense” the same usual meaning, i. e., a stable structure—free of voids. For example, in his affidavit Mr. Perkins stated that the coarse mixture “provided the stability necessary to resist displacement by traffic,” and that the fine top mixture “provided a plastic, water-proof and tough wear-resisting protection to the coarser stone below” and that “due to the fact that this fine aggregate surfacing mixture would protect the stones in the coarse aggregate lower portion from wear, it was obvious that this lower portion could be designed on the basis of using those proportions of each size particle of aggregate which laboratory tests showed would give the *densest* aggregate and minimum of voids and thereby also a maximum of stability.” [R. 126.] Mr. Perkins also stated in his affidavit that the Warren mixture was that which employed “those proportions of ingredients which by laboratory tests gave the most dense aggregate” [R. 123], or “those which will give the greatest density *or* minimum of voids * * *.” [R. 122.] If all that is meant by “dense” is “impermeable to moisture,” why would Warren put a further impermeable coat above the mixture of greatest density? Type A employs the Warren mixture, and, therefore, to use the words of Mr. Perkins, and as compared to the top quarter-inch course, the binder course of Type A is “the most dense.” At the trial of this case, and after appellant had learned from the affidavit of Mr. Jensen that the binder course of Type A pavement contained a proportion of voids less than the top 1/4-inch surface course, Mr. Perkins shifted his testimony

to the extent of adopting a novel meaning for the term "dense." To meet the exigencies of the case, he then advanced the theory that the term "dense" means "impermeable." Mr. Perkins introduced elaborate proofs before the court to show that the top 1/4-inch course of Type A pavement is more impermeable to moisture than the binder course. It is not necessary to dispute that fact, because it is totally irrelevant. It proves nothing in this case, that water will pass more quickly through a structure employing large particles than through a structure employing smaller particles, although the voids in the latter be greater in proportion. It is common knowledge that the passage of water through fine holes will be retarded due to surface tension, friction and adhesion. This is explained by Daniell in his well-known "Text Book of the Principles of Physics" under the titles "Surface Adhesion" and "Surface Friction." The phenomena controlling the passage of liquids through interstices falls under the separate scientific subject of hydraulics, and the principles involved here have nothing to do with the stability or solidity or denseness of physical structures. The fact remains that, in the paving industry, a pavement was the "densest" when it contained the least percentage of total voids and was, therefore, of the greatest stability, and in that sense it was used by Wallace in the patent in suit. Claim 2 of the Wallace patent is clearly not infringed, because it specifies that the wearing surface shall be "densest at the top." The top 1/4-inch of Type A wearing surface is of less density than the binder course by which it is carried.

The Wallace Patent Is Void if Construed to Cover Type A Pavement as an Infringement.

We have heretofore pointed out that in Type A pavement, appellees have merely employed the approved practices common in the prior art. The materials for the binder course were selected and graded in accordance with the expired Warren Patent 727,505. In employing a mixture of sand and bitumen for the top course and spreading the same in a thin layer, appellees have merely followed numerous prior patents, to which we have heretofore referred. To sustain a finding of infringement in this case, appellant contends that Type A pavement differs from the pavements of the prior art because there is no sharp or clear dividing line between the two courses. The reason that the juncture-line between the binder course and thin top course of the Type A wearing surface is somewhat irregular, is because of the fact that the coarse materials employed in the binder course mixture necessarily produce a somewhat roughened upper surface. A roughened surface will be had in pavement construction wherever the mixture embodies a substantial proportion of large particles. It is for this reason that fine mixtures are employed in lieu of coarse to produce smooth surfaces. This court has doubtless observed numerous road pavements employing large mineral aggregate particles, and noted that each and every one of them has a roughened upper surface, unless it be covered with a fine mixture. This is none the less true if the mixture be given a protracted rolling and permitted to stand until it is cold before



The black spots noted by arrows are "voids" or air spaces
 and appear dark because the stones behind the voids
 are coated with asphalt. *Sp. K. 1000*

a top covering is placed thereon. As stated at p. 7 of Appellant's Brief before the District Court: "* * * the surface would show small voids or pores no matter how long or carefully the wearing surface was rolled." Obviously, upon the spreading of the finishing mixture, the finishing mixture penetrates the surface indentations, in each and every of these pavements. This necessarily gives an uneven and irregular meeting-line between the top and under layers. Such an irregular bonding of the two layers was not original with Wallace, and consequently cannot be patented in the Wallace patent. On the opposite page, for the purpose of illustration, we have reproduced the photograph of the vertical cross-section of Type A pavement constituting Appellant's Exhibit 19 herein. At the right of the photograph of Type A pavement we reproduce the photograph constituting Exhibit A to the affidavit of plaintiff's expert, Perkins. This Exhibit A is stated by Mr. Perkins in his affidavit, to illustrate the standard prior art sheet asphalt pavement, and to plainly show "two separate distinct layers" with "a distinct horizontal line of cleavage between the two layers." [R. 125.] The finishing course of this pavement was $1\frac{1}{2}$ inches thick, and for the purpose of comparison we have cut off the upper $1\frac{1}{4}$ inches of the wearing surface in Type A so that there remains above the lower course approximately $\frac{1}{4}$ inch of the upper course to correspond with Type A. We submit that the juncture-line is no more irregular in the Type A wearing surface than in this

prior sheet asphalt construction. Mr. Jensen so testifies in his affidavit. [R. 182.]

Appellant does not deny that the base for Type A wearing surface was first thoroughly compressed and then left for a number of days before the wearing surface was spread thereon. The base of Type A wearing surface is a mixture of mineral aggregate and asphalt, the particles of the mineral aggregate being proportionately larger than those in the binder course. The specifications provide that the base shall be treated as follows:

“Immediately after the asphalt concrete has been uniformly spread, as above specified, the pavement shall be rolled with a steam roller, weighing not less than twelve (12) tons, and giving a compression of not less than 300 pounds per linear inch width of tire. The rolling shall continue until the surface is unyielding and true to grade and cross section.

* * * * *

“Unless permission is given by the County Surveyor, not more than three (3) days shall elapse from the time any base is completed, before the top or wearing surface shall be laid.”
[R. 52, 53.]

We will ask the court to examine Physical Exhibit E, which is a specimen of Type A pavement removed from the Blackstone Avenue job just after completion. This specimen is composed of the binder and finishing course, *together with a portion of the base*. An inspection of the exhibit demonstrates that the juncture-line between the binder and finishing courses is no

more irregular, and the materials of these two courses are no more blended, than is true of the binder course and the base. This belies plaintiff's representation that the reason there is an irregular line of juncture between the binder course and the finishing course in Type A is due to the fact that the binder course is not thoroughly compressed and that appellees desired a blending. It is due to the physical fact that the large mineral particles in the aggregate will present some superficial voids at the top of the surface, and that the finer mixture will necessarily fill the superficial voids. This was not the invention of Wallace, and was old and well-known in the prior art, and is a physical characteristic of every composite pavement. To construe the patent in suit to cover such a physical characteristic would be permitting appellant at this late date to monopolize each and every composite pavement superposing a layer of fine material upon an under-layer of coarse material.

In Appellant's Brief the statement is made that "Wallace was the first worker in the art ever to conceive of the idea of blending two courses of different materials into one, by any process." (p. 42). The statement is without any foundation in fact, when expanded to include the mere absence of a sharp or clear dividing-line between two courses. Compare the old sheet asphalt pavement, as pictured in the exhibit annexed to the affidavit of appellant's expert, Mr. Perkins, above reproduced. There are numerous prior patents of record in this case which disclose and describe two paving courses superposed one upon the

other, the material of the top course filling the superficial voids at the surface of the lower course and producing an irregular line of juncture.

In patent 675,430, granted to F. J. Warren on June 4, 1901 [R. 499f], a layer B of stone coated with bituminous material is described as prepared to receive a further mixture of mineral aggregate and bituminous material. Their manner of juncture is described in the patent as follows:

“Upon and *into* this prepared surface is then thoroughly rolled a heavy layer of specially-prepared ingredients which have reference to their packing and binding character with regard to each other and also with respect to the character of the surface which is to receive it and of the voids, cells, or spaces in it. This layer is a binding or surfacing layer, and *it is constituted to unite with the rough surface of its supporting-layer by entering the spaces, channels, and voids between the stones thereof to a very considerable extent* and so as to fill them.” (Warren Patent 675,430, p. 1, lines 66-77.)

At an earlier point in the specification it is stated that this upper layer is:

“* * * united by pressure and by *permeation* with the intermediate course or layer of stone upon which it is erected, and with the voids and spaces therein the under surface of the said surfacing or binder layer *knits*.” (Warren Patent 675,430, p. 1, lines 36-40.)

In Patent No. 691,708. granted to F. A. Malette on January 21, 1902 [R. 499k], a layer B is shown super-

posed on a foundation C. The layer B is composed of a coarse mixture of mineral aggregate and bituminous material. After the spreading of the layer B, the mixture is described as rolled “enough to firmly press the stones together and materially reduce the voids, without, however, altogether filling them.” (Malette Patent, p. 1, lines 97-100.) A thin finishing layer of bituminous-coated fine mineral matter is then spread upon the layer B as follows:

“Upon the layer B is placed a surface-coat or top-dressing A of tarred stone-screenings or sand, or both, the same being laid loosely, so as to fill the spaces between the protruding tops of the stones and also cover the stones lightly. The effect of traffic is to *force* the surface-dressing firmly and compactly *into the spaces* referred to.” (Malette Patent 691,703, p. 2, lines 21-28.)

In Patent No. 88,139, granted to John P. Cranford on March 23, 1869 [R. 499a], a cobble-stone base is prepared, and the patent describes:

“I next apply a composition, formed of sand, ashes, gravel, or similar material, rendered plastic by the admixture of sufficient tar, or other bituminous material. *This is rammed or otherwise forced into the interstices of the stones, so as to adhere to them.* This layer is shown at *b*.”

In Patent No. 861,650, granted to W. E. Hassam on July 30, 1907 [R. 430a], there is described a lower course of coated mineral aggregate *b* and a layer of fine material spread thereon and rolled thereinto. In rejecting claim 2 submitted by Wallace in his amend-

ment of October 25, 1909, upon this Hassam patent, the Patent Office said:

“In the first course of this reference, coarse stones and fine stone are coated and a filler of sand, cement and small stones is applied thereto and *rolled in*, all intimately uniting into one mass. It is held that since cement is defined in this reference that any cement may be used, as asphalt, bitumen or portland cement. All that applicant defines in the claim over this reference is the stone dust, which is not deemed sufficient to warrant patentability.” [R. 450.]

This rejection by the Patent Office was acquiesced in by Wallace, who cancelled the claim [R. 451] and inserted, as a substitute therefor, the claim now constituting claim 2 of the patent in suit [R. 452]. Under familiar principles of law, it is not open to appellant to contradict the ruling of the Patent Office in which Wallace acquiesced.

It is fully established in this case by the testimony of Mr. Jensen, Mr. Leyden, and defendants' witness Burdge, and the various exhibits above referred to, that the binder course of Type A wearing surface is rolled sufficiently to fully consolidate the same before the fine mixture is spread thereon. There is no evidence to the contrary. The principal fact upon which appellant relies is that the finishing course was spread while the binder course was still hot. Appellant urges that this must have been done in order to secure a blending. Appellant argues that it is more expensive and inconvenient and requires additional apparatus to apply the top course to the binder course while the latter is

still hot, because that requires having two different mixtures prepared at the pavement at the same time. This argument establishes that it is contrary to the patent in suit to apply the fine mixture while the under-mixture is hot. The Wallace patent expressly provides that his invention does not add expense or require more apparatus, but, to the contrary, states: "It contemplates the provision of such a pavement. adapted to be expeditiously laid at small cost of skilled-direction, apparatus, labor and material." (Wallace Patent, p. 1, lines 10-13.) If Type A wearing surface requires the duplication of apparatus, as urged by appellant, certainly in so doing it is quite contrary to the Wallace patent in suit, which states that "only little apparatus is required for the mixing." (Wallace patent, p. 2, line 14.) Appellant's argument as to the additional expense of the application of the top layer to a hot binder layer shows that in this respect Type A pavement is essentially contrary to the patent in suit.

Appellant's Brief (p. 34) asks a number of questions relating to why the top course of the Type A wearing surface is applied while the binder course is hot. The answer to this is, that if the asphalt content of the lower course be hot at the time the upper course is applied, this more readily and effectively produces a soldering of the top course to the binder course. The adhesion of one paving course to another must be accomplished through the medium of the asphalt binder. As said by Wallace, "There is no bond of union between the pieces or particles of the

mineral matter other than that formed by the bituminous cement * * *.” [R. 91.] In having the asphalt of the lower course heated at the time the upper course is applied, a coalescing of the asphalt content of the two courses is secured and an effective soldering action accomplished. This was a principle well known and resorted to in the paving industry long prior to any invention of Wallace. It was specifically considered by the United States Supreme Court in *United States Repair & Guaranty Co. v. Assyrian Asphalt Co.*, 183 U. S. 591, 46 L. Ed. 342, where the Supreme Court said:

“Before the time of either patent the world knew that heat disintegrated some things and melted others, and we cannot concede invention to the thought that that might be true of different kinds of asphalt. Indeed, even in the face of the grave testimony contained in this record given by unquestionably expert men, we find it also difficult to concede that it was an exertion of invention to apply heat to the edges of an excavation to make a bond between the old and the new material.” (46 L. Ed., p. 346.)

This case was decided by the Supreme Court on January 6, 1902, more than seven years before Wallace applied for his patent. The patent before the Supreme Court in that case related to resurfacing pavement for repair purposes. It appears from the decision of the Supreme Court that, prior to the invention of the patent there in suit, it was contended that it had been the practice to remove the original

surface material from the area to be repaired and apply new surfacing material while the remainder of the original pavement remained cold. The alleged invention consisted in heating the surface from which the old material had been removed and the surrounding edges to produce a firm adherence of the new material. The patent there in suit set forth that where the original pavement was cold when the new surfacing was applied, "the line or joint between the old hardened material and the new material has been plainly discernible, * * *," and that by having the old material hot at the moment of the application of the new material, there did not result "any distinct dividing line between the old and new material." The patent there in suit was granted July 18, 1893, and even at that date (sixteen years before Wallace applied for his patent) the Supreme Court found that was an old principle in the paving industry. The Supreme Court quotes in its opinion from "Asphalt, Its Origin, Its Preparation, and Its Application," by Leon Malo, published in Paris in 1888, as follows:

"* * * The sole remedy for this evil is to remove all the bad part and replace it by new asphalt, taking care therein to heat the edges of the sound portion so as to obtain a perfect soldering, as we have explained a little further back." (46 L. Ed. 346.)

The Supreme Court also refers in its opinion to a patent issued to Paul Crochet on June 11, 1880, in France. In speaking of this patent, in *U. S. Repair &*

Guaranty Co. v. Standard Paving Co., the United States Circuit Court of Appeals for the 2nd Circuit, on May 25, 1899 (95 Fed. 137) says: .

“The Crochet patent, which was for a method of repairing the French pavements of rock asphalt, and which used the intense heat of the patent in suit, seemed to the circuit court an anticipation. Crochet heated the part to be repaired, by a movable furnace, until the surface became friable. The upper and damaged part of the layer was removed by a toothed iron hoe, which performed the function of a rake, and roughened the part not removed. A suitable thickness of asphalt in powder was then spread over the depression, and tamped in the ordinary way.

* * * * *

“It is, however, noteworthy that Crochet thought that the beneficial effect of his process was to soften the subjacent layer of the French pavement so that it should ‘unite perfectly with the new layer, and form with it a thickness, without solution of continuity.’ ”

In the case of *United States Repair & Guaranty Co. v. Assyrian Asphalt Co.*, 100 Fed. 965 (C. C. A. 7th Circuit),—opinion rendered April 16, 1900,—Henry N. Moss, superintendent of streets, District of Columbia, testified:

“Under the Perkins heater system, the old or poor stuff is burnt out until the burning reaches good material. The depth of this burning under the present specifications was required to be at least three-quarters of an inch. I have seen re-

pairs made where the depth was less, and the repairs were made in first-class order. This burnt-out material is then scraped out, and under the present District specification *the surface must be reheated again before the asphalt that is used to make the repairs is put in.* It is then rolled with a steam roller.” (p. 971.)

In the last cited case, the court quotes from the Beckwith report to United States Commissioners, Paris Exposition 1867, in which the manner of resuming and continuing the work of laying asphalt pavement from day to day is thus described:

“To resume the work of the previous day, the edge of the solid asphalt must be cleared of dust and loose particles, and a layer of hot asphalt thrown upon it to heat it. When the edge is sufficiently heated, the layer thus thrown down is removed and returned to the furnace for reheating; and as this removal takes place a hot layer from the carts is thrown down and spread, and the packing immediately commenced as before described. The edges of the old and new work thus unite perfectly, and no joint or seam remains visible.” (100 Fed. 971, 972.)

The foregoing decisions authoritatively establish that the Wallace patent in suit is void if construed as urged by appellant. The departure from the prior art which appellant urges exists in Type A construction, is the application of the surface layer before the binder layer is cooled. It is shown from the above reported decisions that such application merely employs a principle which was well known in the prior

art, and that such principle is in no wise an invention of Wallace. The application of a layer of paving material to a roughened, soft and heated under-layer, to secure a firm adherence, was known long prior to any invention of Wallace. In the Crochet patent, granted June 11, 1880, by the French Republic, this is described as follows:

“It consists in heating the part to be repaired by means of a movable furnace which is carried over the surface of the pavement until this disintegrates and becomes friable. The upper part of the layer of asphalt, and that which has been damaged are removed by means of an iron hoe having an arm of little teeth which performs the function of a rake. This hoe while removing the material, forms on the remaining part numerous striations which render the surface rough, and increase the adherence of the portion added above, which will perform the renewal. * * * In consequence of the softening of the (subjacent) layer this unites perfectly with the new layer and forms with it a thickness without solution of continuity, this repairing and renewal having in no way altered the neighboring parts.’”
(87 Fed. at pp. 340, 341.)

In the Crochet and Perkins patents, the principle of applying a paving mixture to a heated and roughened surface was made use of particularly for the purpose of resurfacing. So far as the result to be obtained by having the under-layer hot at the time of the application of the top layer, there is no distinction between resurfacing and initial surfacing of a pave-

ment. Nor is the extent of the particular area surfaced or resurfaced, material.

In *U. S. Rubber & Guaranty Co. v. Assyrian Asphalt Co.*, the Supreme Court says:

“The process described in the Crochet patent is for the ‘preparation and recharging of compressed asphalt roadways.’”

and quotes from the Crochet patent as follows:

“It is clearly evident, besides, that the same work of recharging can be done over the whole surface of a street, instead of being done in spots, and that it is independent of the depth of the asphalt layer.”

The Supreme Court quotes claim 2 of the Crochet patent as follows:

“Recharging, by the addition upon the surface thus softened, of an asphalt layer of convenient thickness, which is stamped by the usual means.”

From this it clearly appears that the paving industry was well aware, prior to Wallace’s invention, that a proper adherence of two paving layers could be accomplished without a resultant distinct dividing-line by applying the upper layer to a roughened surface of the under-layer while the latter was hot. In the language of Mr. Justice Lamar:

“* * * a mere carrying forward or more extended application of an original idea—a mere improvement in degree—is not invention.” (*Burt v. Evory*, 133 U. S. 349-358, 33 L. Ed. 647, at 651.)

The District Court in this case carefully considered the contention of appellant based upon the application of the top layer while the binder layer of Type A was hot, and said:

“The real contention of plaintiff seems to be that its patent is infringed if an upper course of a pavement be laid upon a lower course of the same while the lower course is yet in a hot or plastic condition, irrespective of whether it is rolled intermediately or not. In view of the prior art I cannot conclude that plaintiff is entitled to have its patent thus construed, because the Patent No. 727505 issued to Warren in 1903 and which expired before defendants’ structure was produced, as hereinbefore referred to, indicated the laying of a *‘bituminous composition of any desired nature’* upon an undercourse and *the rolling into this ‘while it is yet soft’* of sand, gravel or fine stone.” [R. 503.]

Four pages of appellant’s brief are devoted to a criticism of this statement of the trial court (pp. 64-67). The criticism is based upon misinterpreting the statement of the trial court and assuming that by the statement the court meant to refer to a merging or blending of material into the intermediate course A of the Warren patent. This assumption is totally unwarranted, and the trial court correctly states in his opinion that the Warren patent provides that the pavement “‘may be covered, if desired, with relatively thin surfacing of clear asphalt-cement or an asphalt or bituminous composition of any desired nature.’” [R. 501.] The Warren Patent 727505 is relied upon by

the court in the statement above made, as showing that Wallace was not the first in the art to conceive of the rolling into an under-layer while it is yet soft of fine material, etc. The trial court correctly states that this is established by Warren Patent 727505. It is also established by the decisions in the *U. S. Repair & Guaranty Co.* cases above referred to.

To make out a case of infringement in this case, appellant is driven to a feature which is nowhere embodied in the Wallace patent, and a feature which is in no way an invention of Wallace. To sustain appellant's position is to give appellant, under the Wallace patent, a monopoly of the mere spreading of a surface mixture on a binder course, while the binder course is hot, even though the binder course be first individually rolled. This is manifestly improper, because Wallace made no such invention and the idea is totally foreign to the patent in suit. Nothing is said in the Wallace patent concerning the temperatures at which any of the mixtures are to be laid. Whether the mixture B is to be laid hot or cold, is not disclosed in the patent. The same is true as to the mixture C. The patent does not state whether the mixture B shall be hot or cold when the mixture C is spread thereon. The patent is likewise silent concerning the requisite temperature of the pavement during compression. The patent contains no suggestion or direction as to how soon after the spreading of the mixture B the mixture C shall be spread. So far as anything appears to the contrary in the Wallace patent:

(a) None of the materials or mixtures employed in the pavement need ever be heated;

(b) The mixture B might be allowed to become entirely chilled before it was spread;

(c) The mixture B might be allowed to become absolutely cold before the mixture C was spread.

How, then, can the Wallace patent be said to cover the fact that in Type A wearing surface the finishing course is spread while the binder course is hot? If the prior art did not disclose such a thought, how could it be covered by the Wallace patent, which does not describe it? If it was not an invention over the prior art, appellees are certainly entitled to employ it, because appellant cannot patent something which is not an invention. If it is an invention, to be covered by the Wallace patent, it must be described therein. This is the primary prerequisite for any patent, under *Revised Statutes* 4888. As said by the Supreme Court in *The Incandescent Lamp Patent*, 159 U. S. 465, at 474:

“If the description be so vague and uncertain that no one can tell, except by independent experiments, how to construct the patented device, the patent is void.”

If it is an essential feature of the Wallace patent that the mixture C be applied while the mixture B is hot, then the Wallace patent is void for the failure to describe this feature. Appellant's representative, Perkins, testifies that it is necessary in order to lay the Wallace pavement, to have on the street at the

same time a hot supply of both the fine and coarse mixtures. [R. 127.]

“In the method, covered by the patent in suit, however, it is necessary to follow up the coarse mixture with the fine before the former has become cold in order to secure the proper compression on the coarse mixture and also assure the desired blending and bonding of the two mixtures into a single non-cleavable layer.” [R. 104.]

Appellant argues that this had never been attempted before Wallace with any type of pavement, and that “practical paving men thought that in actual practice it would be found impracticable, * * *.” (Appellant’s brief, p. 33.) This argument can only lead to the conclusion that the Wallace patent is void. In *Neptune Co. v. National Meter Co.*, 127 Fed. 563, the Circuit Court of Appeals for the Third Circuit says:

“Moreover, if it was an essential part of Nash’s invention to so weaken the inclosing head that the entire head will yield, it was his duty under the statute to distinctly so state.”

See to the same effect:

MacColl v. Knowles Loom Wks., 95 Fed. 982,
986 (C. C. A. 1st C.);

Edison Gen. Elec. Co. v. Crouse-Hinds, 152
Fed. 437, 440 (C. C. A. 2nd C.);

American Lava Co. v. Steward, 155 Fed. 731,
736 (C. C. A. 6th C.);

Germer Stove v. Art Stove Co., 150 Fed. 141,
145 (C. C. A. 6th C.).

Appellant's brief asserts that this proposition "is certainly a novel one" (p. 43), and argues that all the law requires is "that the inventor of the product disclose the best known method to him of producing his new product." Appellant argues, and Wallace testifies, as above quoted, that to produce the product of the patent in suit, "it is necessary to follow up the coarse mixture with the fine before the former has become cold," and argues that this was something entirely new. It is not disclosed in the Wallace patent. *Sec. 4888 of the Revised Statutes* requires that a patent must contain a written description "* * * of the manner and process of making * * * in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make * * * and use the same * * *." Obviously, those having a knowledge only of the prior art could not learn from reading the patent in suit how to produce the pavement, if appellant be correct as to the novelty of the hot application. It is an established rule of patent law that a patent is not valid "unless the specification discloses completely at least one practical way in which to make the product." *Hemming Mfg. Co. v. Cutler-Hammer Mfg. Co.*, 243 Fed. 595, at 600. We submit that appellant is in this dilemma:—that either it required no invention over the prior art to lay the surface course mixture while the binder mixture was hot, or, if it did so require invention and is an essential prerequisite for the Wallace pavement, then the Wallace

patent is void for failure to describe and direct the same; and that, on either proposition, the bill of complaint should be dismissed. As we view it, this whole matter of the binder course in Type A wearing surface being hot at the time the surface mixture is applied, is an attempt by appellant to make out a case of infringement by interpolating into the Wallace patent something that is no part thereof at all. In the words of the Supreme Court:

“If this feature be an advantage, as now claimed, it is strange that no allusion is made to it in the specification.” (Fastener Co. v. Kraetzer, 150 U. S. 111, 116.)

During the entire time that the application for the patent in suit was in issue before the Patent Office, Wallace in no manner ever suggested that the mixture B should be hot when the mixture C was spread. Before the Patent Office, Wallace insistently urged that if the mixture B receive any compression before the mixture C be spread, that then the merging sought by him could not be accomplished and, therefore, the product prescribed by claim 2 in suit could not be attained. Wallace now represents that such compression is immaterial, and that the essential thing is having the mixture B hot at the time the mixture C is spread. If this latter be true, why did not Wallace so state to the Patent Office? On February 5, 1910, Wallace argued to the Patent Office:

“When therefore in constructing pavements such as described the compacting of the lower layer of wearing surface before the application of the

upper layer would virtually destroy its usefulness. As owing to the cementitious properties of the bitumen, the mass of lower layer is coherent or agglutinated and in this condition could not be forced into interstices or voids for the lower layer having already been subjected to pressure it is capable of withstanding a greater load or pressure without displacement of the particles than the material which is desired to be forced to penetrate or permeate the mass. So that following the line of least resistance this material not forced into the voids of the lower layer but is merely spread or plastered over the surface and does not blend with the lower layer.” [R. 465, 466.]

The contention now made by appellant directly contradicts this representation to the Patent Office, and now asserts that if the under-layer be hot, then the merging will occur. The file wrapper of the proceedings before the Patent Office shows that the Patent Office was very reluctant to grant to Wallace any patent at all, and viewed his application as presenting an extremely narrow differentiation from the prior art. The Patent Office would, obviously, never have granted Wallace a patent covering the then old and common practice of applying a surface layer to a heated under-layer to produce a firm adherence of the two layers.

Appellant urges that one of the questions to be decided by the court herein is whether, in fact, appellees “do get the blended effect characteristic of Wallace, or whether their two courses merely adhere

to each other by virtue of the stickiness* of the asphalt, as in the prior art.” (Appellant’s Brief, p. 71.) This typifies the misconstruction of the Wallace patent which forms the erroneous basis for appellant’s brief. The Wallace patent expressly disclaims a multi-layer wearing surface, and yet the argument of appellant is that infringement exists because appellees have two courses firmly united together. Appellant does not reconcile its position that the Wallace pavement distinguishes from the prior art because the Wallace pavement is blended whereas the courses of the prior art pavement “merely adhere to each other by virtue of the stickiness of the asphalt,” with the testimony of Wallace herein that in any and all pavements “there is no bond of union between the pieces or particles of the mineral matter other than that formed by the bituminous cement.” [R. 91.] If there be any distinction, the distinction obviously resides purely in a matter of degree and cannot, under the established rules of patent law, constitute an invention or be patentable.

“It is not invention to change the size or degree of a thing, or any feature or function of a machine or manufacture.” (*Walker on Patents*, 5th Ed. Sec. 31.)

In re Bond, 44 App. D. C. 262.

*The term “stickiness” does not adequately describe the effective “soldering and bonding” of the two layers as accomplished in the prior art.

In *Guidet v. Brooklyn*, 105 U. S. 552, the patent covered paving stones of a certain shape and with rough sides. Paving stones of the same shape, but with sides less rough, had been known before. To make the sides of the prior stones rougher, was held by the Supreme Court to be a change in degree only, and, therefore, not patentable. If it be assumed, contrary to the proofs in this case, that the top course of Type A wearing surface adheres more firmly to the binder course than does the top course of the prior art pavements, the only difference in result is in the degree of adhesion, and the same is not a patentable invention.

In *Smith v. Nichols*, 21 Wall. 112, 22 L. Ed. 566, the Supreme Court considered a patent upon a corded fabric. After reviewing the prior art, the Supreme Court came to the conclusion that the only difference obtained by the patented fabric over the prior art was a "greater tightness of the weaving." The court said:

"The evidence before us leaves to the complainant none of the particulars claimed as of his invention, except, perhaps, greater tightness of the weaving, a firmer grasping of the elastic cords by the weft threads half round, above and below, and greater beauty and value of the fabric. The entire ground of the controversy between the parties is reduced to this narrow isthmus, and the question presented for our determination is one rather of law than of fact."

The Supreme Court held the patent void on the ground that the distinction between the tightness of the weaving in the patented fabric over the prior art was merely a matter of degree and therefore not patentable. The Supreme Court says:

“But a mere carrying forward or new or more extended application of the original thought, a change only in form, proportions or degree, the substitution of equivalents, doing substantially the same thing in the same way by substantially the same means with better results, is not such invention as will sustain a patent. * * * All the particulars claimed by the complainant, if conceded to be his, are within the category of degree.”

The principle of having a fine surface course adhere to a binder course, was specifically disclosed in prior patent No. 375,273, to C. J. DeSmedt, in which it is stated (Defendants' Exhibit M-2):

“* * * the bituminous matter employed in cementing the broken stone of the middle or binding course, B, will cause the wearing surface or top layer, C, to adhere, thus forming a solid or a comparatively solid mass, which increases the strength of the pavement * * *.” (De Smedt Patent, p. 2, lines 12-18; R. 499b.)

The brief for appellant dwells at length upon the fact that the binder course in Type A construction is given an “initial rolling,” whereas, after the surface course is laid, the entire pavement is given a pro-

tracted rolling. We have heretofore shown that an “initial compression” is the only compression which permits a blending of the materials of the two courses, —(i. e., we here use the term “blending” as referring to a merging of the materials into a single mass, as prescribed in the Wallace patent, and as distinguished from the fine material merely filling superficial voids at the top of the coarse material as in the prior art.) The rolling which is continued after the under-layer has been consolidated, does not effect any merging of the upper material into the under-layer. The final rolling of the pavement is protracted because, until the surface has sufficiently cooled, the fine material will show the tracks of the roller, etc. [R. 38.] This is the practice with all composite pavements of this character. The evidence establishes that in Type A the consolidation of the under-layer takes place before the top course is spread. The rolling of the completed pavement thereafter cannot serve to merge any of the fine material into the binder course, because the binder course has already been subjected to pressure, and as said by Wallace to the Patent Office, the binder course can withstand “a greater load or pressure without displacement of the particles than the material which it is desired to be forced to penetrate or permeate the mass.” and, as described by Wallace, the fine material, therefore, will not be “forced into the voids of the lower layer but is merely spread or plastered over the surface. * * *” [R. 466.]

Before the Patent Office, Wallace distinguished his invention from the prior art on the ground that in the

prior art the underlayer was individually rolled. Appellant here urges that in Type A pavement, the binder course is not individually rolled *enough*. The contention is not in accord with the fact, but if it nevertheless be accepted, what are the limits of the Wallace patent? We have shown that on Type A pavement the substantial portion of the pavement constituting the ten middle strips was subjected to a minimum of eight compressions of the twelve-ton roller, and that the other strips were subjected to a compression by the same roller in a decreasing number to the outer strip. It must be admitted that appellees are entitled to employ the prior art. How much rolling is it necessary to employ to be under the prior art instead of the Wallace patent? To conform to the statute, the Wallace patent must definitely set its own metes and bounds. This is vital, and of monetary importance in this litigation, as no decree for an accounting adequate to guide a master can be framed without deciding at what point of rolling the prior art is departed from and the Wallace patent is entered upon. Furthermore, under the Clayton Act, it would be incumbent upon the court in entering an injunction in this case, to point out specifically this line of demarcation. This all goes to show that, if the Wallace patent be construed as urged by appellant, the patent is void for indefiniteness and uncertainty. It is elementary that a patentee can have nothing beyond what he has particularly pointed out and distinctly claimed, so that those familiar with the art

may draw the line between public right and private monopoly. *McClain v. Ortmyer*, 141 U. S. 419, 35 L. Ed. 800; *Merrill v. Yeomans*, 94 U. S. 586. *Revised Statutes*, Sec. 4888, requires that in a patent the inventor

“* * * shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery.”

The only line drawn in the Wallace patent to determine the metes and bounds of the Wallace monopoly is non-rolling, as distinguished from any rolling, of the under-layer. If we go into the realm of “some” rolling, there is absolutely no line of boundary to the patent, and the patent becomes void for uncertainty. The distinction appellant attempts to make in this case leaves the public “in limbo,”—within a twilight zone,—uncertain as to what appellant concedes is within the prior art and what appellant nebulously contends is the Wallace invention.

Appellant argues that it is “impossible” to construe claim 2 of the patent in suit without giving both claims of the patent the same effect. Appellant cites the decision of this court in *Los Angeles Art Organ Co. v. Acolian Co.*, where it is stated that “*prima facie*” different claims of a patent are not to be construed as of the same scope. This presumption is “*prima facie*” only, and wherever it comes into conflict with the fundamental and controlling rule that a patentee’s claim can be no broader than his actual in-

vention, the courts have not hesitated to rule that the *prima facie* presumption is overcome.

Burroughs Adding Mach. Co. v. Felt & Tarrant
Mfg. Co., 243 Fed. 861, at 869;

Courson v. Westinghouse Air Brake Co., 263
Fed. 89, at 92.

Furthermore, the presumption does not exist if the two claims can be differentiated by any other distinctions between the claims. Treating claims 1 and 2 of the patent in suit as identical in respect to the lack of individual compression of the under-mixture, we still find that claims 1 and 2 differ as follows:

(a) Claim 2 does not require that the materials be previously mixed prior to spreading on the base, as required by claim 1. (b) Claim 2 is narrower than claim 1, because claim 2 requires that the pavement shall be "blended at the top of the mass," whereas claim 1 merely states that the pavement shall be "blended," and does not specifically state that it must be blended at the top. These distinctions are clearly sufficient to remove the claims from the presumption relied upon by appellant.

Jones et al. v. General Fireproofing Co., 254
Fed. 970.

We submit that, to interpret the Wallace patent as urged by appellant, would be to concede to Wallace a monopoly on a mere uneven line of juncture between two courses of a wearing surface, which necessarily existed in the prior art pavement; a monopoly on the application of a surface coating to a

hot under-layer, the employment of which was common knowledge in the prior art; a monopoly on a mere difference in degree of the adhesion of the surface mixture to the binder course; and that no one would know whether the amount of rolling employed by it in a pavement was enough rolling to bring the pavement within the prior art, or was so little rolling that it would be within the bounds of the Wallace patent. To obtain his patent, Wallace disclaimed any intention to cover a pavement employing an individual rolling of the under-course, and his patent must, in justice, be confined in scope to that disclaimer.

Answer to Further Erroneous Contentions Made in Appellant's Brief.

With the evident intent to avoid as far as possible the necessity of discussing the merits of the present controversy, appellant's brief represents that there is only one question in the case, namely, whether or not infringement of the patent in suit is avoided by an initial rolling of the binder course and the spreading of the upper course while the binder course is hot. (Appellant's brief, p. 7.) We believe we have heretofore shown that this is not a fair or true statement as to the issues to be determined by the court. In fact, it is an issue which becomes of importance in the case principally because Wallace disclaimed before the Patent Office any pavement in which there was such an initial rolling, and represented to the Patent Office that such an initial rolling would preclude the

possibility of attaining the construction sought to be patented. The primary issues to be determined by the court are, 1st, the proper construction of the Wallace patent, and, 2nd, whether or not appellees have used any invention made by Wallace and covered by the patent in suit. We believe we have shown above that the single novel feature presented in the Wallace patent is a thought excluded from Type A wearing surface. It is our intention here to briefly refer to several additional misleading and erroneous contentions made in the brief of appellant:

(A) Appellant represents that the pavement of the patent in suit has gone into wide use and has materially advanced the art. (Appellant's brief, pp. 18, 19.) Appellant asserts that 18,000,000 yards of the pavement patented in the patent in suit have been laid in the eleven years between 1910 and 1921 [R. 485]. Appellant uses these figures to give the impression that this is an enormous quantity of pavement, but if we compare it with the total paving in the United States during the same period, we find that its use was insignificant. One-eighteenth of all of this pavement was laid in the single city of Bridgeport, Connecticut. [R. 220.] During the same period of time, appellant concedes that 43,000,000 yards of the Warren pavement (Patent 727505) was laid [R. 485]. The fact that most of the pavement referred to by appellant as that of the patent in suit was laid in 1920 and 1921 [R. 485], and a very small portion laid during the ten preceding years, corroborates the testimony of Mr. Leyden herein as follows:

"I was amused in reading the affidavits of George H. Perkins and Edwin C. Wallace filed in the above entitled case, to note their derogatory statements in regard to pavement laid in accordance with United States Letters Patent No. 727,505. It was the practice under such patent to my knowledge to employ a finishing course constructed by applying a flush coat of asphalt by means of a squeegee and thereupon roll screenings into the same. I laid this pavement for years under contracts authorized by plaintiff Warren Brothers Company and under inspection of representatives of said company. Until shortly prior to the expiration of said Patent No. 727,505, to my knowledge, plaintiff Warren Brothers through its representatives, consistently asserted that the method of that patent was the most practical and discouraged the use of a finishing coat consisting of previously mixed finely divided aggregate and bitumen. It was only shortly before that patent was about to expire, to my knowledge, that plaintiff Warren Brothers Company, attempted to introduce or laud the method or type of construction embodied in said 'Type B' specifications." [R. 149.]

Over 40,000,000 yards of Warren pavement was laid during the period in question, and there were hundreds of millions of yards of sheet asphalt, macadam, unsurfaced hydraulic concrete, and various other types of pavements, laid in the United States during the same time. It is certainly not established in this case that the pavement of the patent in suit met with immediate and widespread success within the

meaning of the authorities. It is not shown in this case that anyone has ever paid appellant any royalty under the patent in suit, and there has not been the slightest recognition of that patent. Appellant being a large company, with connections throughout the United States, it would be most surprising if it was not able to introduce as much as 18,000,000 square yards of any given pavement in this country within eleven years. When counsel for appellees attempted to cross-examine Mr. George Warren regarding the facts of the laying of the pavement in question, counsel for appellant objected, and the following ensued:

“The Court: The amount of pavement they laid is immaterial, anyhow.

“Mr. L. S. Lyon: With that understanding, we will withdraw the question.

“The Court: All right.” [R. 267.]

Furthermore, there is no evidence in the record identifying the actual construction of the 18,000,000 square yards which appellant asserts is that of the patent in suit. Proper objection was entered to the conclusion that the pavement laid was that covered by the patent in suit [R. 203], and no attempt was ever made by appellant to establish the mode of construction or the characteristics of the pavement referred to. We may safely assume that in making up the figures, appellant has included all types of pavements which come within appellant's misconstruction of the patent in suit. For commercial use of a patented invention to be of any effect in a suit, it must be

shown that the use is due to the novel features covered by the patent in suit, and not to some other invention or commercial instrumentalities.

Winston Motor Carriage Co. v. Lindsay Auto Parts Co., 239 Fed. 521;

Meinecke & Co. v. Lisk Mfg. Co., 274 Fed, 747.

There is in fact no evidence in this record that any pavement has ever been laid which corresponds to that described in the patent in suit. So far as we are able to find from the record, every piece of pavement referred to by appellant as coming under the Wallace patent employed the Warren Patent 727505 mixture and not a "crusher-run." The Wallace suggestion of employing a crusher-run and introducing into the voids at the top only the necessary fine material by spreading and blending a fine mixture C, has never been successfully employed so far as appears from this record. The patent in suit, on the evidence, should be construed under the rule established by this court in the case of *Henry v. City of Los Angeles*, 255 Fed. 769, as a mere paper conception, to be narrowly construed.

Included within the pavement which appellant urges as being that of the patent in suit is that of the Type B specifications herein. We have heretofore shown that these Type B specifications do not embody the pavement of the Wallace patent in suit. Appellant reiterates the fact that Mr. Jensen in his affidavit refers to Type B wearing surface as that of the patent in suit. Mr. Jensen made such assumption for the

purpose of differentiating between the results which would be obtained if a top course be spread after instead of before the compression of the under-layer. Mr. Jensen was not in a position to legally construe the patent in suit, and his unconsidered assumption is not controlling or binding upon this court. We have shown that Type B construction is not that patented in the patent in suit.

(B) Much of the argument in appellant's brief consists of a comparison of the Type B and Type A specifications, and in a comparison of specimens of the product of the two presented by appellant. Since Type B specifications employ the Warren mixture, a comparison of the same with Type A does not establish identity with the patent in suit. In submitting numerous sawed specimens of Type A and Type B pavements, appellant has apparently endeavored to give the impression that these specimens are representative "scattered" examples of the pavement in the county of Fresno. As a matter of fact, a large number of these specimens may be fitted together, and it will be found that they are pieces cut from identically the same block. For example, the court is requested to compare and match up Exhibits 361, 363 and 365. The fact appears that all of the specimens presented by appellant from Blackstone avenue "* * *" were all sawed from a section about one foot square." (Appellant's brief in the Dist. Court, p. 23.) The cross-examination of appellant's witnesses also shows that the remaining specimens

were all carved from four small pieces of pavement, out of some 150 miles of construction actually laid in Fresno county. There is no testimony that any of appellant's specimens are characteristic or fair specimens of Type A or Type B construction. In its brief before this court, appellant admits:

“There is, of course, more or less irregularity in the laying of a pavement—it is not a precise art, and variations in the thickness of the fine surface mixture necessarily occur in both Type A and Type B pavements, which result in slight variations in the position of the tops of the stones with reference to the surface of the pavement in both cases.” (p. 58.)

The specimens presented by appellant were evidently selected as best calculated to support appellant's case, but only two of all of appellant's exhibits showed any of the coarse aggregate of the binder course approaching the surface of the pavement. Obviously, as the surface mixture is spread and raked by unskilled labor,—common Mexican laborers being employed,—in 150 miles of pavement a few places will remain where the unskilled laborers did not distribute enough mixture for the top course. No specimen submitted by appellant shows that any of the top course was in fact forced or blended into the binder course. The specimens merely show that a sufficient amount of the top course mixture was not distributed on that particular point of the pavement. This is no surprise, under the circumstances. Mr. Jensen states that a specimen of the kind indi-

cated by appellant is not a fair sample of Type A pavement and does not conform to Type A specifications, because there is not "at least one-quarter inch" of finishing course present as required by item 3 of the specifications. [R. 425-427.] The difference between Type A wearing surface and Type B wearing surface readily appears from an examination and comparison of physical Exhibits A and B (specimens of Type B) and physical Exhibits E and F (specimens of Type A). With reference to the specimens of Type B, Mr. Jensen calls attention to the fact that the fine mixture is blended or merged to such an extent into the coarse mixture that the stone pieces of the coarse mixture appear at and constitute part of the riding surface. [R. 159.] In contrast, Mr. Jensen points out that in specimens of Type A, a one-quarter-inch top layer is maintained with none of the stony pieces from the binder course protruding through to the riding surface. [R. 180.] Appellant's brief (p. 58) states: "* * * there is no such general difference between the two types." This statement is contrary to the evidence in the case. Mr. Jensen testifies: "This has been the experience had with the entire construction of wearing surface in Fresno county under said Type B specifications." [R. 159.] Mr. Leyden testifies: "With 'Type B' construction it is impossible to obtain a uniform distribution of the top or finishing mixture. This is due to the fact that the uncompressed binder course presents a very irregular surface upon which it is impossible to uniformly spread the mixture for the finishing course.

[R. 147.] * * * With 'Type B' construction the function of a seal coat is destroyed because each stony piece protruding at the top of the pavement will provide an entrance point for moisture. On the other hand, with 'Type A' construction, I have found that the compression of the binder course provides a relatively smooth surface upon which the top mixture may be evenly and uniformly spread. When the same has been compressed, this top mixture will be of uniform thickness, in all cases approximately $\frac{1}{4}$ inch, and will constitute a perfect seal coat." [R: 148.] This distinction between Type A and Type B wearing surfaces would be accentuated if a specimen of wearing surface constructed in accordance with the patent in suit existed for comparison. As Type B employs the Warren graded mixture, the under-mixture in Type B is a complete and compact mixture in which the voids have been filled to repletion before the fine mixture is spread thereon. Therefore, the fine mixture cannot merge into the coarse mixture to the extent which would be the case in the open coarse mixture of the type called for by the patent in suit.

It should be remembered, in comparing Type A and Type B specifications and wearing surfaces, that a general similarity must exist, because they both adopt the same principles and practices which were common in the industry prior to any invention of Wallace. The base is the same; the mixtures are substantially the same. The fact that the mixtures are the same is no criterion of infringement, because the mixtures were taken from the prior art, and not from

the patent in suit. In employing the Warren mixture, Type B' has a binder course which corresponds to the binder course of Type A instead of the patent in suit. We ask the court to avoid falling into a misapprehension of the issues in this case merely because a comparison by the eye of Type A and Type B specimens submitted by appellant is somewhat confusing. The issues in this case cannot be determined on superficial observances of that kind, because the only invention made by Wallace was extremely narrow and minute and is not truly reflected in Type B pavement.

(C) Appellant places much reliance upon the rule that a product claim is not necessarily limited to the process described in the patent for producing the product. This issue is of less importance in the case, because of the fact that Type A wearing surface is not the product claimed in the Wallace patent, as we have shown above, and because of the fact that appellees have made no use of the only novel invention of Wallace. We have no intention of denying that where an inventor actually invents a new *product*, which is novel and not dependent upon a particular method of producing the product, that a proper patent thereon may be infringed by the manufacture of the same product by any other process. But, to invoke that rule, the inventor must show that his product is *different* from any product of the prior art and that his product is *independent of the process* employed for making the same. Where the product is

dependent upon a particular process, and the sole invention consists in a particular order of application of material to form a well-known composition (*pavement*), we cannot perceive how the patent can cover more than the particular application,—because that was the only invention or creation made. The process and the product of the process being dependent, there is only one invention. The patent in suit on its face limits its scope to “* * * a process of producing a pavement and in the pavement, the *product of the process*, * * *.” (Wallace Patent, p. 1, lines 29-31). We have shown above that in the Patent Office, Wallace differentiated his invention from the prior art in the feature of applying the fine mixture prior to compression of the lower mixture. Wallace’s position before the Patent Office was that a prior compression of the under-mixture would make the production of the pavement sought by him impossible. For example in the amendment filed September 16, 1909, Wallace stated to the Patent Office: “‘The rolling of the stone before the second course or binder is applied’ alluded to by the Examiner would defeat the aforesaid end that applicant seeks to attain, and is expressly disclaimed in applicant’s specification, page 5, lines 4 to 12.” In his affidavit filed in this case, the patentee, Wallace, recognized that his invention is not independent of his process, as follows: “This can be accomplished by following the process *covered* by the patent in suit” [R. 111], and “in the *method* covered by the patent in suit * * *” [R. 104.] We are unable to perceive where Wallace

has invented any product, unless it be a pavement comprising a base and a single course wearing surface comprising an open crusher-run mixture with fine material interspersed in the voids only at the top thereof. Clearly, Wallace did not invent the multi-layer wearing surface, nor the proportions of materials, employed by appellee. As to a similar claim, see the decision of the Circuit Court of Maryland, rendered April 4, 1888, in the case of *Van Camp v. The Maryland Pavement Company*, 43 Official Gazette 884, where the court said:

“The patentee simply, and by apt and appropriate words, claims that he has invented an improvement in concrete pavements. As before shown, concrete pavements made of the same materials variously compounded were old and in common use. The result of his combination was a material not different in anywise from former combinations, except that it contained a little more or less of some of the same ingredients mechanically combined, and differing from others only as the proportions of the ingredients differed, when such a mechanically-combined material is old and in common use, and has already been the subject of numerous patented improvements, both as to the proportions of ingredients and the process of manufacturing and methods of laying the pavements made of it. *To say that a person who has merely altered the proportions of the ingredients or the process of combining them has discovered a new composition of matter in the sense of the patent law is to trifle with language.*”

It cannot be denied that the claims of a patent should be construed in the light of and by reference to the specification. In that connection, when it becomes necessary to ascertain the exact character of a product defined in a patent claim, the description and specification of the patent may be looked at to judge from the process therein described, what product it is that will result. When we look at the specification of the Wallace patent, we find that the product of that patent is dependent upon and inseparably associated with its mode of production. Under such circumstances, the patent in suit is not infringed where the sole and only invention made by Wallace is not employed.

“The process and the product are but one, and it may well be assumed that the product results from the use of the process described in the patent, and that the product is not one which may be produced in any other way. *Plummer v. Sargent*, 120 U. S. 442, 7 Sup. Ct. 640, 30 L. Ed. 737; *Mosler Safe Co. v. Mosler*, 127 U. S. 354, 361, 362, 8 Sup. Ct. 1148, 32 L. Ed. 182.”

(*American Graphophone Co. v. Gimbel Bros.*, 234 Fed. 361, at 369.)

“Consequently, in considering claims 8 and 9, it is necessary to read them in connection with the process described in the patent, and to limit the scope of the claims to the product which is the result of that process.”

(*Downes v. Teter-Heany Development Co.*, 150 Fed. 122, at 124.)

“The invention is a product or manufacture made in a definite manner. It is not a product alone, separated from the process by which it is created.’”

(*Goodyear Co. v. Davis* 102 U. S. 222, at 224; 26 L. Ed. 149.)

In *Hide-ite Leather Co. v. Fiber Products Co.*, 224 Fed. 969, the court held that because the patent expressly stated the invention “includes the product resulting from the process described as well as the process itself,” the claim of the patent covered only such a product as had been produced by the process of the patent or its equivalent. In the patent in suit, a corresponding statement is found in: “The invention alluded to consists in a process of producing a pavement and in the pavement, *the product of the process.*” (p. 1, lines 29-32.)

Appellant’s brief asserts that there is an inconsistency in the opinion of the District Court in this case, in that the District Court recognized that if the product of a claim be independent of the process by which it was produced the claim is not limited to the process specified, and yet ruled that claim 2 of the patent in suit is limited to a product produced by laying two courses one upon the other “without any intermediate rolling.” There is no inconsistency in the opinion of the District Court, but rather a recognition of the force of the aforesaid rule and a proper consideration thereof. The District Court properly found, following the statements contained

in the Wallace patent and made by Wallace to the Patent Office, that the product of claim 2 of the patent in suit is not independent of eliminating "an intermediate rolling. For, as said by the lower court: "In truth and in fact, in this wise only, (*i. e.*, without there being any intermediate rolling) could there be a composite blended course."

Conclusion.

We trust the court will appreciate the importance of this case to the paving industry. For seventeen years appellant enjoyed a monopoly under Warren Patent 727,505. We believe that this suit is an attempt by appellant to prevent the public from enjoying the benefits of the Warren invention after the expiration thereof. No court has ever accorded the Wallace patent in suit the expanded construction urged by appellant. We have never read a brief which was more plausible on its face, and yet which would stand less analysis, than the brief for appellant in this case. Appellant is enabled to make its plausible argument because it proceeds upon a number of fundamentally erroneous premises and assumptions. Among these are that Wallace was the first to produce a multi-layer wearing surface in which there is no sharp or clear dividing-line between the two courses, and that Wallace was the first to conceive of applying a mixture to a hot under-layer. Both of these assumptions are demonstrated to be unsound. An outstand-

ing characteristic of the brief for appellant is its misconstruction of the Wallace patent, and its attempt to revamp the Wallace patent to cover the direct opposite of what Wallace invented and patented. We have shown that defendants' Type A pavement is based entirely on practices and methods which were well-known and established in the paving industry prior to any invention of Wallace. We have shown that the invention presented to the Patent Office by Wallace resided in the production of a single wearing surface layer in which the voids were filled only at the top, thereby avoiding the necessity of proportioning the fine material and distributing it throughout the mass. It appears from the proceedings upon the application for the Wallace patent that Wallace represented to the Patent Office that it was essential to the production of his pavement that the under-mixture should not be rolled prior to the spreading of the fine material, and that Wallace disclaimed any intention to cover a pavement wherein such rolling was had. It also appears from the Patent Office proceedings that the Patent Office refused to grant Wallace a patent upon a pavement comprising a base and a multi-layer wearing surface the two layers of which were firmly bonded together. We have shown that Type A wearing surface does not correspond to the claim in issue in four particulars:

(a) Type A wearing surface employs the Warren mixture in lieu of the specific materials prescribed by the Wallace patent for the open mixture B;

(b) The fine material superposed on the binder course in Type A wearing surface is not “blended with the coarse mixture at the top of the mass,” but, as prescribed in Type A specifications, remains as a superposed layer “at least one-quarter inch in thickness.”

(c) Type A wearing surface does not comprise a single “compact rigid layer” as required by the claim in suit, but is a multi-layer construction having a binder course with a top finishing course thereon.

(d) Type A wearing surface is not “densest at the top,” as required by the claim in suit, for the Warren binder course in Type A is denser than the finishing course above it.

That Type A wearing surface does not infringe the patent in suit, is so clear that we have not found it necessary to seriously contest the validity of the Wallace patent in suit. If the patent in suit can be sustained, it must be by limiting it strictly to the specific feature by which it differentiates from the prior art. The District Court was quite right in this case in ruling that the patent in suit must be narrowly construed, because, in view of the prior art, “There was not much left for the patentee to patent.” There is no novelty or validity at all in the Wallace patent in suit if it be expanded and construed as urged by appellant. We, therefore, submit that the decree of the District Court dismissing the bill of complaint in this case should be affirmed, on the ground that:

(a) Defendants' Type A pavement is not an infringement of the Wallace Patent, and

(b) If the Wallace Patent be construed broadly enough to include defendants' Type A pavement as an infringement, the Wallace patent is void.

Respectfully submitted,

GEORGE R. LOVEJOY,

District Attorney of the County of Fresno.

RAY C. WAKEFIELD,

Special Counsel for the County of Fresno.

FREDERICK S. LYON and

LEONARD S. LYON,

Special Patent Counsel, Solicitors for Defendants-Appellees.

